SECOND CENTURY

OPPORTUNITIES · FOR · AGRICULTURE

November 4 - 6, 1985

The Westin Hotel, Edmonton, Alberta

· PROCEEDINGS ·

Alberta
AGRICULTURE

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SECOND CENTURY

OPPORTUNITIES · FOR · AGRICULTURE

· PROCEEDINGS ·

A Conference for
the Total Agricultural Sector

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SECOND CENTURY

OPPORTUNITIES · FOR · AGRICULTURE

Hon. LeRoy Fjordbotten
Minister of Agriculture

For a century now, Alberta's farmers and ranchers have been among Canada's leaders in agriculture. In many ways, this success is due to the vision and foresight displayed by the pioneers who followed the westward expansion of the CPR in the mid-1880s.

Agriculture in Alberta is now beginning its second century. To help ensure that the growth and progress fostered by the pioneers of our industry's first century is continued into the next 100 years, Alberta Agriculture organized a major forum for the discussion of the longer term issues facing our industry.

Second Century — Opportunities for Agriculture, held in Edmonton November 4-6, 1985, brought together producers, processors, agribusinessmen, researchers and government representatives, all to focus on one issue: the future of agriculture in Alberta.

The conference produced definite ideas on the directions that government and the private sector should follow in order to secure the best possible advantage from tomorrow's opportunities.

Most importantly, the conference established that if Alberta's agriculture industry is to meet the challenges we face in the coming decades, all sectors of the industry must work together, more closely and more cooperatively than ever before.

One way in which government and private sector can begin to achieve this is in openly discussing the insights we gained at **Second Century**.

At the close of the conference, I issued a challenge to all those attending to spread the message that we in agriculture must look beyond today's concerns to the future, if that future is to be prosperous. If we want a rate of development similar to that experienced in agriculture's first century, we must plan ahead now, in the same spirit of optimism that guided our industry's early pioneers.

This publication represents one step in that process. Collected here are the papers and reports presented at the **Second Century** conference.

The next step is up to you — the individuals who make up each sector of our industry. The topics and concepts raised in these documents must be read, shared, discussed and evaluated by producers, processors, suppliers, retailers and consumers — in short, by everyone in agriculture's private sector.

As a follow-up, your thoughts and concerns regarding these issues and ideas must be communicated to the government, in order that planning and policy development can reflect the consensus of the industry.

Speaking for the government, we require carefully considered input from the private sector if we are to plan effective government participation in the future of agriculture in Alberta. If we are to make progress as an industry, we must work together. You, individually and collectively, are a part of that process.

The government and industry-wide communication and consultation begun at **Second Century** has brought the future within our grasp. Now the real work begins. Together, we must endeavour to produce concrete results from the ideas and directions generated at that important forum.

There are indeed tremendous opportunities for agriculture in its second century. In the future, I hope we will be able to look back to the **Second Century** conference as one of the keys that enabled us to make the most of those opportunities.

LeRoy Fjordbotten

LeRoy Fjordbotten
Minister of Agriculture

December 1985

Program

Monday, November 4, 1985

From 11:00 a.m.	REGISTRATION
11:00 a.m. - 1:00 p.m.	Complimentary sandwiches and refreshments Chancellor/Consulate Room
1:00 p.m. - 2:45 p.m.	INTRODUCTORY SESSION Alberta Room Chairman: Hon. LeRoy Fjordbotten Co-Chairman: Kent Ward, Olds *The General World Economy* Carl E. Beigie, Dominion Securities Pitfield Ltd., Toronto *The Canadian Agricultural Economy* Dr. Clay Gilson, University of Manitoba
3:15 p.m. - 5:00 p.m.	SESSION A Alberta Room Chairman: Keith Sveinson, Royal Bank Co-Chairman: Jack Campbell, M.L.A. *The World Food Outlook* Dr. Brian Oleson, Canadian Wheat Board, Winnipeg *The North American Livestock Outlook* Charles Gracey, Canadian Cattlemen's Assoc., Toronto
3:15 p.m. - 5:00 p.m.	SESSION B Marlboro Room Chairman: Dr. Hugh Horner, Alberta Terminals Ltd Co-Chairman: Kent Ward *Prospects for Adding Value to Farm Products* Howard Harowitz, Principal, Currie Coopers & Lybrand, Vancouver *The International Marketing Outlook* Ted Bilyea, Canada Packers, Toronto

7:30 p.m. - 10:30 p.m. MINISTER'S RECEPTION
Manitoba/Saskatchewan Room

Your chance to speak to the Hon. LeRoy Fjordbotten about agricultural opportunities.

Tuesday, November 5

8:30 - 9:30 a.m. OPENING PLENARY SESSION
Alberta Room

Chairman: Dallas Schmidt
Co-Chairman: Walter Van de Walle

The State of the Industry
Hon. LeRoy Fjordbotten,
Minister of Agriculture

9:30 a.m. - 10:00 a.m. COFFEE

10:00 a.m. - 12:00 noon SESSION A
Alberta Room

FARMING FOR PROFIT WITH FINANCIAL RESOURCES

Chairman: Nigel Pengelly, MLA
Co-Chairman: Keith Sveinson, Royal Bank

The USA Perspective
Dr. Neil Harl, Iowa State University

The Canadian Perspective
Dr. Daryl Kraft, University of Manitoba

A Farmer's Perspective
Larry Greer, High Prairie

10:00 a.m. - 12:00 noon SESSION B
Marlboro Room

INDIVIDUALS IN DOMESTIC AND INTERNATIONAL MARKETS - TARGET OPPORTUNITIES

Chairman: Dr. Hugh Horner
Co-Chairman: Barbara Sparrow, MP

Review of Canadian/Alberta Performance
Mr. K. Ebihara, Canada Packers, Tokyo

Opportunities from a USA and Canadian Perspective
Dr. John Morris, Senior Vice-President,
Safeway Inc., Oakland, California

Exporting - How we can do it better
Jim Youde, Exec. Director, Western USA
Agricultural Trade Association

Producer's Role in Exporting
Walter Paszkowski, Producer, Sexsmith

12:15 p.m. - 1:15 p.m. LUNCHEON
Manitoba/ Saskatchewan Room

1:30 p.m. - 3:00 p.m. SESSION A
Alberta Room

LAND, SOIL & WATER RESOURCES - THE ALBERTA ADVANTAGE

Chairman: Hon. Fred Bradley, MLA
Co-Chairman: Dallas Schmidt

Provincial Overview
Dr. Art Olson, Assistant Deputy Minister,
Alberta Agriculture

Water Resources
Henry Kroeger, MLA, Chairman Alberta
Water Resources Commission

Land & Northern Agriculture Development
Hon. Don Sparrow, Associate Minister,
Public Lands and Wildlife

Land & Northern Agriculture Development
Johnny Vos, Keg River

Soil Conservation
Dr. Bill McGill, University of Alberta

1:30 p.m. - 3:00 p.m. SESSION B
Marlboro Room

FOOD PROCESSING - A GROWTH INDUSTRY

Chairman: Reuben Hamm, Agaware
Co-Chairman: Kent Ward

Development: The Influence of Research and Technology
Dr. Bill Ballantyne, Director of Technical Services, Gainers Ltd.

The Changing Financial Environment
Derek Mather, President, Vencap Equities Alberta Ltd.

What the Market Place is Telling Us
Dr. M. Heffring, Heffring Research Group, Calgary

The Commercial Sector and Government Programs
Barry Mehr, Assistant Deputy Minister, Alberta Agriculture

3:00 p.m. - 3:30 p.m. COFFEE

3:30 p.m. - 5:00 p.m. SESSION A
Alberta Room

LAND SOIL & WATER RESOURCES - THE ALBERTA ADVANTAGE (Continued)

3:30 p.m. - 5:00 p.m. SESSION B
Marlboro Room

FARMING FOR PROFIT WITH HUMAN RESOURCES

Chairman: Keith Sveinson
Co-Chairman: Shirley Cripps, MLA

Management of Stress can Increase Farm Profits
Dr. Lilly Walker, Prof. of Psychology, University of Brandon

6:30 p.m. CASH BAR

7:30 p.m. BANQUET
Manitoba/Saskatchewan Room

Speaker: W. O. Mitchell

Wednesday, November 6

8:30 a.m. - 10: a.m.	SESSION A Marlboro Room AGRICULTURAL EDUCATION - HARNESSING NEW TECHNOLOGY Chairman: Dan Cornish, Olds College Co-Chairman: Dr. Bob Elliott, M.L.A. *Engineering Development & Role of Agricultural Colleges* Eric Jensen, Water Management Engineer, Olds *Farming for the Future and Department Extension Program* Dr. James P. Mahone, Director, Research Division, Alberta Agriculture *Vaccine Research & Development for Livestock Industry* Dr. Steve Acres, Director, VIDO, Saskatoon *Crop Development & Technology* Dr. Jim Helm, Plant Breeder, Lacombe *Product and Process Development for Food Industry* Dr. Fred Wolfe, University of Alberta *Technology Transfer Needs from a Producer's Standpoint* Harry Haney, Picture Butte, Alberta
8:30 a.m. - 10:00 a.m.	SESSION B Alberta Room INDIVIDUALS IN DOMESTIC & INTERNATIONAL MARKETS - THE USA OPPORTUNITY Chairman: Hon. Larry Shaben, MLA Co-Chairman: Kent Ward *The Necessity of Freer Trade with the USA* Chris Mills, Policy Advisor, Alberta Cattle Commission *The Reality of Freer Trade with the USA* Robert Binnendyk, Vice-President, Labatt's Prairie Region

10:00 a.m. - 10:30 a.m.	COFFEE
10:30 a.m. - 12:00 noon	REPORTING SESSION Alberta Room Chairmen: Dallas Schmidt and Dr. Hugh Horner Summary reports from the concurrent session will be presented
12:15 p.m.	LUNCHEON Manitoba/Saskatchewan Room Luncheon Speaker Hon. LeRoy Fjordbotten Minister of Agriculture

The general world economy

Carl E. Beigie

The world economy continues to go through a difficult transition from a severe bout of inflation in the 1970s. We have had great success in moderating the rate of price advance, but this has produced sustained distress for producers of many basic commodities, including agricultural commodities. Furthermore, lower inflation has been achieved at the cost of very high rates of unemployment in most nations of the world, and at this time there is no clear sign that anyone knows how to bring the associated high social and economic costs down. In a phrase, we are reasonably clear about what we are going through a transition **from**, but there is great uncertainty - and more than a little danger - involved in figuring out where we are in transition **to**.

Economists must forecast, but I am frankly skeptical about the value of the forecasts being made at this time. Sound analysis can provide government policy officials with effective advice for staying generally within the guideposts for reasonably balanced economic growth. If governments refuse to follow that advice, it becomes a matter of guessing to estimate the path the economy will follow. And if governments continue along a disequilibrium policy course, then it is impossible to know with any precision when a crisis point will be reached, what the exact nature of the crisis will be, or how government will respond. Compounding this complexity is that fact that whereas the world economy is becoming progressively more interdependent, international policy coordination has really not progressed very far beyond a rudimentary form.

The world economy is not, I insist, in anything like a "normal" business cycle. Although we have gone through a protracted phase of disinflation - and deflation for many—we have no clear guide from the past to signal what lies ahead. We know that economic growth is too slow, unemployment too high, government budgetary deficits too large, inflation-adjusted interest rates too excessive, and balance of international payments positions too unbalanced. It would also be my

---

Mr. Carl E. Beigie is Director and Chief Economist for Dominion Securities Pitfield Limited, Toronto, Canada. He also teaches at McGill University and the University of Toronto.

contention that we know what must happen next to correct these fundamental distortions, but there is little evidence yet of the political will to undertake these necessary correctives. So what most of us do is watch helplessly, thankful for any bright spot on the near horizon, no matter how fleeting, and close our eyes to the dangers that lurk at many corners.

The priority problem in the world economy today and from which inaction on most other problems rests because they have such a small -but, nevertheless, cumulatively very important - relative impact, is the U.S. budgetary deficit. This deficit is largely what economists call "structural", meaning that it cannot be balanced by normal economic growth alone. Furthermore, while a hard-headed approach to efficiency-enhancing policies could boost U.S. growth above normal levels, the evidence is increasingly clear to the non-indoctrinated that President Reagan's "supply-side" theorizing was guilty of a great excess in optimism in the light of empirical realities.

The U.S. budget deficit must be brought down. The longer they wait, the harder the task will be. Structural deficits "crowd out" job-creating, output-expanding private investment. They have also been crowding out U.S. net exports. During the early quarters of the U.S. recovery from the 1981-82 recession, the U.S. dollar was the only currency with both magnetic appeal and a fully open capital market behind it. The U.S. dollar surged, and the Canadian dollar tagged along with it.

In recent months both dollars have been falling in relation to most of the other major currencies. This is at least a moderate negative in the U.S. inflation outlook, but for Canada it is virtually a total positive. Since around 75% of our total trade is with the United States, we will get little inflation kick in the third-country currency cost of our imports. Indeed, it is my expectation that this third-currency exchange rate adjustment factor should help Canada's dollar rise modestly relative to the U.S. dollar over the next several years. If this proves out, it should also help our relative inflation performance in this period.

A lower dollar should help Canada's exports on two counts. One is that our goods will be cheaper to the rest of the world. A second is that stronger currencies abroad will allow further reductions in foreign countries' interest rates and, in turn, more vigorous growth performances. We should be able to share in that growth, particularly in our commodity exports.

But I am jumping ahead of myself. What are the chances that the U.S. government will finally bring its deficit down? If it does not, I am frankly worried about the state of the world economy. Inaction will mean a prolonged period of slow U.S. growth, higher-than-necessary unemployment, and above-normal inflation-adjusted interest rates. Furthermore, I suspect that scenario would cause a shift toward excessive ease in U.S. monetary policy, producing at least somewhat of an increase in inflation rates again.

I want to pause briefly on this point about inflation. An issue I almost never see discussed is that the costs of an unbalanced economy are borne disproportionately by various sectors in our system. Some gain, some lose, but the system as a whole suffers. Commodity producers, as a group, tend to gain in periods of inflation; they lose as a group in periods of disinflation or deflation. Given the group to whom I am speaking today, I must acknowledge that inflation would not be a bad thing for commodity producers - at first. But any return to higher inflation would soon cause a repeat of recession. A far better prescription would call for steps to be taken to cure the overall imbalance, not to bounce back and forth between alternative primary manifestations of that imbalance.

Let us, for the sake of argument - and because I really do not enjoy focusing on the negatives - postulate that firm action is taken on the U.S. budgetary deficit. That would be good news because it would clearly lower long-term interest rates in North America and the world. Lower interest rates would set in motion a new, more broadly balanced, world growth momentum. But that momentum would take time to develop, so it will be important to devise a credible plan for gradual deficit reduction, not to seek to bring it down suddenly, all at once.

What the world economy needs is more growth on a sustainable basis. As we look to the future, however, the composition of that growth is at least as important as its rate of acceleration. For some time, now, the world has been in need of a massive capital investment boom. Investment, in turn, requires saving. Even in countries where personal savings are high, however, such as Canada, the dissaving involved in government deficits is preventing an adequate flow of current output into investment.

The need for an increased focus on investment results from a number of factors. Chief among them is the necessity to adapt to new world economic realities that are the subject of far more seminars than hard-headed policy thinking and action. We are living at a time when we must begin adjusting quickly to the simple reality that nations with disciplined social systems are beating us at our own game.

Management, technology, and financial capital are increasingly free to roam the world in search of trainable, flexible labour prepared to work for far lower real wages than workers in the old industrial world. The result is a challenge of the most fundamental kind - an erosion in our relative, and quite possibly even our absolute, living standards over time. This is not a cry of helplessness - provoking the logic of protectionism - but a plea to recognize the challenge, to understand that we have the strength that we can be mobilized to respond, and to get off our collective policy duffs.

Much of our existing capital stock is out-dated, even as we install it. Our people skills are often equally out of date with the needs that must be met to justify our relative income expectations. While much of the world is moving forward with dedication to what can be, we are looking backward to protect what has been.

What the world economy requires can be summarized as follows:

1. Firm and prompt action on the U.S. budgetary deficit to bring interest rates down without resorting to inflation-generating money supply growth. Public sector credit demands must be eased so private sector credit demands can be given the necessary room to expand.

2. Growth must be encouraged, especially outside the United States, with investment providing the main engine for expansion.

3. Debt-ridden LDCs must be given new refinancing terms that will allow them to increase their imports while they undertake the investments needed to re-accelerate their developmental progress.

4. The world must fight protectionism by opening itself to more trade in a world of sustainable exchange rate relationships.

What are the chances these requirements will be met? I am not overly optimistic that progress will be quick, but there is a reasonable chance that we will nevertheless see some progress in 1986, as we did in 1984 and 1985. There is a slowly growing expansionary momentum outside the United States, and governments appear determined to keep it moving.

The trick will be to avoid severe distortions from causing a breakdown in the process along the way. The U.S. economy is becoming increasingly fragile as consumers become over-extended. Oil prices are vulnerable to a sudden downward adjustment at almost any time. And the financial positions of many LDC debtor nations continue in a precarious state.

Economists do not like to forecast negative outcomes. But negative consequences of bad policies in the past and short-sighted policies that might be adopted in the future have become a constant preoccupation. Frankly, I have been amazed that the world has been able to struggle through as well as it has. There is much left to accomplish, but with a continuation of serious effort and more than a bit of good luck, we can make it all the way back.

Where does all of this leave you who are attending here today? It would be nice to leave you with a bright picture for the near-to-medium-term future. Prospects are not more gloomy than they have been for many of you, but neither would I, in honesty, want to tell you they were rosy. Progress in the United States is going to be slow and spotty at best. Problems, not the least being political indecisiveness, plague most of the rest of the world.

We cannot stop the world so we can get off. There is nowhere else to go. All we can do is struggle on to the best of our abilities, doing what makes good business sense and demanding the same of our governments. There is a lot of frustration around in the Canadian agricultural community today. You are not alone.

The Canadian agricultural industry: challenges, opportunities and prospects

C. Gilson

It is not sheer revolt against things as they are which stirs human endeavor to its depths, but vision of what might be and is not.

I. Introduction

Anyone attending agricultural meetings during the past 2 or 3 years will have sensed that the agricultural misery index has been rising. This general malaise in agriculture has been caused by a number of factors: the spreading financial stress among farmers, the prolonged drought in southern Saskatchewan and Alberta followed by extremely adverse harvesting conditions throughout much of the Prairies, the increasing global food surpluses, declining prices and escalating conflicts among the major agricultural trading nations of the world.

Many farmers are beginning to feel like a badly mauled football team playing against the wind with second down and the need to gain long yardage in their own end of a muddy field.

There is no question that the current issues in Canadian agriculture are extremely serious and that short-run, remedial actions will be required to help many farmers cope with their immediate problems. Those farmers preoccupied with current cash flow problems, crop failure, or the need to make a payment on a debt already in arrears are in no mood for a lecture on the longer run prospects for their industry.

But the majority of farmers are not about to be admitted to an intensive care unit - not yet. Their vital signs are still there even if they are showing signs of the stress and strain of the past few years.

Anyone who has observed the agricultural industry over the past three decades will know that the margin between boom and bust can be a narrow one and that circumstances can change rapidly. The industry did not end in disaster during the late 1960's and the boom conditions of the 1970's could not have continued indefinitely.

Department of Agricultural Economics, University of Manitoba. Prepared for an Alberta Department of Agriculture Seminar, November 4, 1985.

There is a need to look beyond the heavy mist of pessimism and uncertainty which has descended over Canadian agriculture to the longer-run challenges, opportunities and prospects for the industry. Even while coping with the immediate problems, there is a need to build on a more permanent foundation for the agricultural industry of the country.

We face two broad options: we can resign ourselves to the passive option, riding along from obstacle to obstacle on the current of rapidly changing events, convinced that there is little that can be done in an industry faced by unpredictable and unmanageable forces; or we can confront the obstacles in our industry with the determination to take whatever initiatives are necessary, possible and appropriate to build on the fundamental strengths and advantages which we possess. The historical record reveals that Canadian farmers faced some formidable challenges over the past half century and they responded with appropriate initiatives and policies to meet those challenges. We believe that Canadian farmers in the 1980's are no less equal to the task ahead of them.

II. The major issues

We will confine our discussion to the more important issues confronting Canadian farmers from a national and international perspective.

A. The net income squeeze

Two major factors have led to the declining net income margin in agriculture: the high cost structure which emerged during the latter part of the 1970's and early 1980's as a result of general inflationary forces in the economy, and the general decline of farm product prices during recent years. In 1975, farm operating and depreciation charges absorbed 62 percent of the farmers' gross income; this proportion had increased to 84 percent by 1984. This highly reduced net income margin has had the following consequences: reduced expenditures by farmers on major capital items; reduced scope for internal savings to service the debt load; greater vulnerability of farmers to unexpected shocks such as drought or adverse events in the international market. Adjustments, in the short-run, to this reduced net income margin have been reflected in net dissaving, living on depreciation of capital equipment, refinancing of existing short-term debts, arrears in payments on debt and, in the extreme cases, bankruptcy and mortgage foreclosure.

For the highly leveraged farmers, the net income squeeze has created severe financial distress. For the established farmers, there has been a significant erosion of the equity capital in his business.

B. Instability

A second major problem relates to the extreme year-to-year instability in net farm income, particularly in the Prairie provinces where farmers are exposed to highly variable weather conditions and the unpredictable vagaries of the international market place. The average percentage change in net farm income in Saskatchewan from one year to the next for the entire period 1945 to 1983 amounted to 53 percent. In other words, on the average, Saskatchewan farmers can expect "next year's" net income to vary anywhere from 53 percent above to 53 percent below their "current" year's income. Few other industries ride on an economic roller coaster like this.

C. Financial stress

In 1958, when the Farm Credit Corporation was established, it was not uncommon for the farm operator to start the business with capital comprised of one-third **equity** capital (provided by the operator) and two-thirds debt capital (provided by an outside lender) - a leverage factor of 2:1. As the capital requirements of the farm business increased during the 1960's and 1970's farm credit policy was amended to: (a) increase the maximum size of loan available to the farmer; (b) require less and less initial **equity** capital in the business to qualify for the larger loans; (c) permit, accordingly, more **debt** capital to finance the business.

The result, of course, placed the farmer in a more highly leveraged position as a matter of public policy. For example, initial **equity** capital of 10 percent and **debt** capital of 90 percent increased the leveraging factor enormously.

The overall result was predictable. In good times, as in any highly leveraged business, the highly leveraged position of the farm borrower generated extraordinary returns on the farm operator's equity capital - returns which he promptly capitalized back into the acquisition of still further property at increased market values. During times of adversity, however, the highly leveraged farmer was not only faced with an extremely onerous burden in terms of the annual contractual obligations on his debt but, worse still, he was highly exposed to the risks associated with cash flow problems, market disruptions, drought and increased interest rates.

The end results of these circumstances may be seen in the annual reports of the Farm Credit Corporation where it will be noted that an increasing proportion of the FCC loans have been used to refinance existing debts and where the number of loans in arrears has been increasing.

D. Monetary and fiscal policies

The growing interdependence between the farm producers and other sectors of the economy has exposed the farmer, as never before, to the results of macroeconomic policies in the country. Only two of those policies will be discussed here.

1. *Interest rates*

The unprecedented level of the interest rates which prevailed during much of 1981 had a devastating impact on those farmers who were carrying a large debt load and who, in the process, found themselves in a highly leveraged position. The outstanding credit in agriculture is close to $21 billion at the present time. A two or three point increase in the interest rate adds several hundreds of millions of dollars to the farmers' cash operating costs and can quickly offset the benefits of agricultural policies designed to increase the farmers' prices and incomes. It is not surprising why Canadian farmers have taken such a direct interest in the monetary policy of the country.

2. *The budgetary deficit*

Until recently, farmers and their organizations have generally paid little attention to such esoteric matters as government budgetary deficits. But this matter is of direct importance to farmers. When governments have been unable to respond to legitimate crises, because of a lack of public resources, it is time that farmers began to take an interest in the fiscal affairs of the country.

The age of "plenty" was taken for granted during the 1950's, 1960's and 1970's. It was during this period that the seeds were sown for the revolution of rising expectations and entitlements. This revolution was more than a private affair. Governments of the day developed imaginative and seemingly unlimited spending programs. These public programs provided a major impetus for the revolution of rising expectations and entitlements.

The end result was predictable: government was drawn irreversibly into more and more fixed commitments and obligations with respect to society's aspirations. These obligations imposed an enormous burden on the budgetary resources of the government; the federal government's budget moved from a surplus of $266 million in 1970 to a whopping deficit of close to $14 billion at the end of 1980 and a clearly disastrous deficit of $30 billion or more by 1984.

What a pity that some of those imaginative spending programs in the earlier years of plenty could not have been deferred until real crises and truly legitimate needs appeared - drought relief, farm financial crisis, major unemployment and food banks, to cite only a few of the immediate, urgent and pressing problems of the country.

E. Fragmentation of the national market

A review of the historical record will indicate that the present balkanization of the Canadian domestic market for many agricultural commodities resulted from several major policy developments:

1. The national and provincial quotas set under the dairy legislation and the Farm Products Marketing Agencies Act;
2. The provincial "top loading" programs permitted under the 1975 amendment of the Agricultural Stabilization Act; and
3. The various regional development incentives and "bottom loading" policies provided by both federal and provincial governments through legislation and various incentive programs, e.g., feed freight assistance, provincial credit subsidies and production grants.

It should also be noted that the policies which encouraged the balkanization of the Canadian domestic market have also led to the insulation of the domestic economy from the international market place and have resulted in serious conflicts with other agricultural trading nations.

The ultimate irony of the situation is that, while sovereign nations in Europe have struggled since 1957 to establish a common market and a common agricultural policy, Canadian agricultural policy has tended to move in the opposite direction.

There can be no question that the proliferation of competing provincial and federal programs in Canada has complicated the development of a coherent set of truly national policies and has created serious consequences for Canadian agriculture in the field of international trade.

F. The international situation

Within recent years, there has been a significant shift by many countries towards greater protectionism in terms of domestic markets, and a marked expansion in the use of agricultural export subsidies of various types to dispose of surplus production. The decision in July, 1985, by the U.S. Commerce Department and the U.S. International Trade Commission to impose countervailing duties on Canadian hog exports to the USA, and the use of export subsidies by the EC to promote the shipment of beef and pork products to Canada, are recent examples of the domestic/international policy conflicts which are beginning to emerge. The continuing conflict between the USA and the EC over agricultural trade issues has enormous implications for Canadian agriculture. It is clear that Canada is not in a position to compete in a "trade war" with the vast treasuries of these two large economic regions.

G. The international debt problem

One of the major international issues of concern to Canadian farmers has to be the horrendous external debt burden now carried by several countries of the world. Many of these countries have been former importers of Canadian agricultural products. They now find themselves in a position where such a large part of their foreign earnings must be used to service their external debts that little capacity is left to import food products from countries such as Canada.

III. Challenges and prospects

When one views the current circumstances in Canadian agriculture and abroad, it would be easy to become despondent about the prospects for the future. But the Canadian agricultural industry has many fundamental strengths and advantages which should not be overlooked.

Canada has a large and productive agricultural land base relative to its 25 million domestic consumers. The Managerial competence, the financial resources and the technological capabilities of Canadian agricultural producers rank favorably with producers in any other nation of the world. Canadian farmers are supported by a vast agri-industrial system on both the input and output side of their operations and the entire agricultural system is reinforced by a comprehensive set of public programs relating to marketing, credit, research and extension activities.

Canadian agriculture remains an important part of the Canadian economy. In 1984 Canadian farmers spent close to $15.6 billion for a wide variety of inputs and services. In addition to providing a vast array of food products for 25 million Canadians, these same farmers export nearly $10 billion worth of products annually. Approximately 484,000 people are employed in farm production and another 400,000 are employed in industries associated with the farm supply, processing and food distribution industries in Canada.

When all of these activities are added together, it is difficult to exclude agriculture from any serious discussion of economic development policies for the country. In terms of jobs, national income, balance of international payments, tax revenue and private investment, the nation has a large stake in agricultural development.

The capacity is there for a substantial expansion in Canada's agricultural production and export trade. Whether, of course, the opportunities are available for such an expansion is a question that must be confronted.

What is quite certain between now and the year 2,000 is that world population will increase from about 4.6 billion to 6.0 billion people. This means that approximately 80 million food consumers will be added each year to the global market for food. It is true that many countries have increased greatly the productivity of their own agricultural industries during the past decade. But the fact remains that world trade in agricultural commodities is still very large. Approximate estimates of world export trade for a selected number of agricultural commodities may be cited: 100 million tonnes for wheat, 18 million tonnes for barley, 32 million tonnes for oilseeds, 2.4 million tonnes for beef and veal, 1.2 million tonnes for poultry meat, 1.8 million tonnes for skim milk powder, 800,000 tonnes for pork, and 700,000 tonnes for cheese. In 1982, total world agricultural export trade amounted to $224 billion (USA).

Canada's total agricultural export trade of $10 billion represents only 4 percent of the global export trade figure. For some commodities such as wheat and Canola, Canada is a major player in the export market. For other commodities, Canada's export trade represents only a very small fraction of the global trade figure.

During the past 10 or 15 years Canada has enjoyed a very significant increase for some of its agricultural exports. Since 1970 Canadian grain and grain product exports increased by 250 percent, barley exports nearly tripled and rapeseed/canola exports increased by nearly 400 percent.

One of the more instructive lessons to be learned from past experience relates to Canada's grain exports. In 1979 the Canadian Wheat Board set export targets for western grain and oilseed products at 30 million tonnes for 1985 and 36 million tonnes for 1990. These targets were regarded by some skeptics as unduly optimistic given the fact that only 20 to 22 million tonnes were being exported when the projections were announced in the latter part of the 1970's. It is interesting to note that the 30 million tonne export target was reached, in fact, in 1984, one year ahead of the projected schedule.

Not so long ago, we recall the feeling that the opportunities for a significant pork export business were not very bright. It is all the more remarkable that Canadian pork exports to the USA and Japan have ranged from 150 to 160 thousand tonnes during recent years.

In 1968-69 Canadian barley exports amounted to a mere 21 million bushels. At that time the federal Task Force in Agriculture set an export target for barley of 100 million bushels which it regarded as "a reasonable and practical target." By 1973-74 Canadian barley exports amounted to nearly 140 million bushels and by 1983-84 the figure was close to 260 million bushels.

As long as the world trade in agricultural commodities remains as large as it is, it is reasonable to assume that the Canadian agricultural industry has the possibility of participating in that trade.

There are certain realities, of course, that Canada must face in fighting for a share of that global market. Recent studies indicate that the rate of growth in export opportunities during the 1970's will not likely be repeated in the remainder of the 1980's and 1990's. A sign of this slow down in the rate of growth of export opportunities may be found in China where there has been a remarkable increase in the productivity of its own agricultural industry during recent years.

The emergence of the EC as a major exporter of cereals and red meat products, and the likely reaction of the US to the domestic and export policies of the EC and other competitors, will generate a period of considerable uncertainty for Canada.

The USSR, which has imported close to one-third of Canada's wheat exports, will likely remain an important customer for Canadian grain for the short-run but the long-run prospects for this market are very difficult to predict.

While these emerging realities in the international market place should not be ignored, neither should they be permitted to paralyze attempts by Canada to remain a vigorous competitor for those opportunities which do exist in the export markets of the world. For example, during the past decade, nearly a dozen countries of the Pacific Rim have emerged as the world's fastest growing market area. In 1983, the Pacific Rim imported $22 billion worth of agricultural commodities. To what extent has Canada succeeded in penetrating these markets for its agricultural commodities? It is clear that the global agricultural trade market is not there for the taking. The day is long past when Canada can wait for customers to place their orders.

In many of the more aggressive commercial organizations it is not uncommon to have 5 or 6 cents of every sale dollar devoted to market development and promotion programs. An equivalent allocation in agriculture would yield a billion dollars annually for market development and promotion of agricultural products. It is doubtful if more than a small fraction of that amount is actually spent on market development programs by public and private agencies in Canada.

Market development, penetration and promotion programs involve much more than periodic missions abroad. It involves a sustained program of research and analysis of potential target markets, and covers such areas as: local attitudes and customs, consumer preferences, factors influencing consumption of certain products, types of markets (open, mixed or state trading), language requirements, health regulations, packing, branding and labelling practices, local pricing and marketing practices, effective forms of market development and promotion of Canadian products in the target market. It also involves the transmission of the knowledge gained in the target market to Canadian agricultural producers and others involved in the Canadian agricultural export business. Positive examples of agricultural market development programs include the Canadian International Grains Institute and the work done during the past decade by the western canola industry. Other such examples are difficult to find in Canada.

There is no question that public and private support must continue for increased productivity in Canadian agriculture if Canada is to remain competitive in the global trade market. But this support for increased productivity must be matched by corresponding support for market development research and promotion programs. It makes little sense to produce high quality, competitive products if those products are not marketed aggressively in well-researched target markets of the world. Canadian agriculture needs the equivalent of several Lee Iacoccas in the marketing and promotion end of its business.

IV. Implications for policy

Several major policy options must be considered when assessing the future opportunities for the renewal and expansion of the Canadian agricultural industry. Only a selected number of those policy options will be discussed here.

A. Farm credit policies

Agricultural credit issues should be divided into short and long-run categories if suitable policy options are to be developed.

The short-run or rescue-type programs should be focussed on the group of farmers deemed to be in acute financial distress. Several rescue-type programs have been suggested: third-party mediation panels to encourage mutually acceptable settlements between debtor and creditors; voluntary write-down of a portion of the debt principal with guarantee or partial guarantee to creditors for the remainder of the debt, plus an extended period of management supervision for the debtor; provision of a special allocation of capital funds to the FCC to be earmarked for the refinancing of debts in default; quit-claim and lease-back of property to the debtor with future option to repurchase the property; special economic adjustment assistance for the retraining and relocation of debtors who have little possibility of establishing themselves in agriculture.

All of these short-run options have merit, some of which will be severely constrained by the limited budgetary resources of the governments involved.

None of these short-run, rescue-type programs focus on the longer-run structural changes and basic capital requirements of the agricultural industry. At some point in the not-too-distant future, it will be recognized that the traditional methods of financing the family farm business may no longer be feasible. The high leveraging factor involved in the traditional farm credit policies exposes the farm debtor to enormous risks in an industry characterized by unpredictable and wide swings in income. Radically different alternatives may have to be adopted which will permit greater access to "outside equity" capital and less dependence on debt capital.

The difficulty that most farm families have in raising initial equity capital for their business, the use of increasing quantities of debt capital and the leveraging that is associated with that debt, the burden which goes with the internal savings necessary to repay the debt over 20 or 25 years, the narrow net income margin and the year-to-year variability in that net income, suggest that the traditional methods of financing the family farm business are becoming increasingly onerous and risky.

B. The need for a common market in Canada

In a statement relating to the Supreme Court decision in 1971 regarding the famous "chicken and egg war," in Canada, the late Chief Justice Bora Laskin observed:

> *...to permit each Province to seek its own advantage, so to speak, through a figurative sealing of its borders to entry of goods from others would be to deny one of the objects of Confederation, evidenced by the catalogue of federal powers and by S. 121, namely, to form an economic unit of the whole of Canada.*

There is no question that "cooperative federalism" must be made to work much more effectively and harmoniously in Canadian agriculture than appears to have been the situation over the past 10 or 15 years. The fragmentation of the Canadian agricultural common market not only creates an inefficient and costly use of the country's limited resources but it complicates Canada's ability to develop a coherent set of national and international policies as the recent US-Canadian hog/pork conflict has demonstrated so clearly.

Some form of national consultative mechanism, coupled with constructive policy alternatives, must be initiated if a "common market" for agriculture is to be achieved.

C. Stabilization policies for agriculture

For some commodities, particularly the red meat industry, the problem is not the lack of a stabilization policy but, rather, the problem of too many, competing and conflicting policies. A real test of the political will of the provinces, the central government and the several provincial and national agricultural commodity groups to achieve what Chief Justice Bora Laskin called the "economic unit of the whole of Canada" will come with the debate on the "tripartite" stabilization legislation introduced by the federal government in early 1985. This legislation provides the opportunity for the federal and provincial governments and the various farm commodity groups to develop one national and much needed stabilization policy for the red meat industry in Canada. This type of policy is needed if international trade policy difficulties, such as those associated with the recent US-Canadian hog conflict, are to be avoided, and if Canada is to have a reasonably coherent position to place before the US-Canadian trade discussions and the next round of the GATT multilateral trade negotiations.

Another set of stabilization policies of critical importance to Prairie grain producers are those relating to the Grain Income Stabilization Program and the federal/provincial crop insurance programs. Perhaps, the time has come to combine these two sets of programs into one integrated production and price stabilization policy.

Given the experience with major and adverse weather conditions in the Prairies over the past several years, and the several **ad hoc** programs which have had to be developed to cope with the conditions, it would appear that some form of more permanent "major disaster" type insurance program should be developed, either as an integral part of the existing crop insurance programs, or as a separate crop/livestock major disaster insurance program. The prolonged and damaging drought on the Prairies during the summer of 1985 followed by the potentially disastrous fall harvest conditions (outcome uncertain at the time of writing this paper) illustrate the need for some form of major calamity insurance program on the Prairies.

D. International policy options

Canada faces a number of possible alternatives from the standpoint of agricultural trade policy. It can withdraw towards policies aimed at greater national self-sufficiency in food production - greater insulation from the forces and effects of the international market place. It can move towards policies which promote and encourage special sectoral and bilateral trading arrangements. It can push vigorously for greater liberalization of trade under the framework of the GATT multilateral free trade negotiations.

All of these options have implications and consequences for domestic agricultural policies in Canada. When one weighs the evidence, only the latter alternative appears to offer any real opportunities for expansion and growth in the longer-run. Canada does not possess the financial resources, nor does it carry the necessary international political and diplomatic clout, to win a "shoot-out" war of greater protectionism, more non-tariff barriers, increased export subsidies and costly trade credit concessions. Canadian agriculture will survive best in a game where the rules of the game have been agreed upon by all the players involved and where there is a level playing field.

Of course, multilateral free trade will call for some adjustments in Canada's domestic agricultural policies and programs. But the alternative - escalating conflicts among the major agricultural trading nations of the world - has enormously damaging consequences for Canada in the longer-run. Canada does not possess the necessary national resources to "buy" its way into an international market dominated by export subsidies and various types of costly trade concessions.

V. Concluding observations

Anyone attending farm organization meetings, grain transportation hearings, federal-provincial agricultural conferences and farm credit seminars during the last 2 or 3 years will have concluded that Canadian farmers are preoccupied and beseiged by difficulties and problems. There seems to be little light at the end of the tunnel of despair. But the more positive aspects of the industry should not be overlooked.

Canada does face some serious difficulties at the borders with the US, the EC and others. Global surpluses are increasing and prices are declining in world markets. But global agricultural trade still exceeds $200 billion a year and Canada does export about $10 billion worth of farm products annually. A number of Canadian farmers are in serious financial distress and will require some help but the majority of Canadian farmers are still financially solvent even if the profit margin is small and uncertain. The net income margin in agriculture has fallen but farmers continue to produce and hundreds of thousands of persons continue to be employed in the farm supply and processing industries. There is a significant public expenditure on agriculture but 25 million Canadian consumers do receive reasonably priced, high quality foods. Current conditions in Canadian agriculture are not exactly buoyant but neither was the outlook a particularly happy one in 1970, just three years prior to one of the greatest booms in Canadian agricultural history. The projected increase in world wheat stocks for 1985 is estimated to be about 7 million tonnes over 1984 but a drop of only 10 percent in wheat production in the USSR means 8 million less tonnes; a shortfall of only 10 percent in world wheat production means 50 million tonnes, more than double the total wheat production in western Canada.

Who knows, in the final analysis, what the future holds for Canadian agriculture. But let us remind ourselves of our recent history. Here is how one publication described events in 1974 during the height of the world food crisis:

> The grain reserves that once made it possible to send emergency food to stricken areas are now largely depleted. The huge American farm "surpluses" that were such an item of controversy in the nineteen-sixties have long since been given away or sold and eaten. The world stockpile of grain that, in 1961, was equivalent to 95 days of world consumption has fallen to less than a mere 26-day supply now.[2]

The effect of the world "food crisis" in Canada was dramatic. The 1.0 billion bushel stockpile of wheat in Canada during 1969-70 dwindled to only 370 million bushels in 1973-74 while wheat prices soared from $1.68 to $4.58 per bushel. Barley, which had been selling from farm-to-farm at "three bushels per dollar" in 1969-70 had skyrocketed to $3.10 per bushel by 1974-75. Farmers, whose land was valued at $75 per acre in 1969-70 saw the value of their estates soar with the price of their products.

There are serious problems and issues in the Canadian agricultural industry at the present time and they must be addressed but it would be premature to start foreclosure proceedings on the industry.

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[2] *New York Times. Give Us This Day... Arno Press, New York, 1975.*

The world food situation

B. T. Oleson

From time to time, we all find ourselves wondering what will happen over the longer term, say 5, 10 or even 20 years hence. In this day and age of rapid technological, political and economic change even ten years seems very long. Indeed, for many of our farmers, it is difficult to look beyond the current short term outlook of poor crops and poor prices. However, long term projections, although difficult, are important. In the Canadian grains industry they help to form the basis for investment decisions by both the public and private sectors. For example, in about 1975, the Canadian Wheat Board began to emphasize long term projections focusing upon 1985 and the need for a "target approach" in the Canadian grains sector. In this fashion, marketing, transportation and production could all move forward toward a common goal. This approach proved to be successful. I will return to these and other long term projections later. First, I would like to discuss the various factors which must be considered when carrying out long term analysis.

Factors to consider and quantify

There are many important factors that must be incorporated into a long term analysis of the world grain trade. Our confidence in predicting values for these variables varies considerably depending upon the factor, the country, the time period, etc. The following is a partial list of important factors.

Factor

A. **Physical**
  - Land availability
  - Soil quality
  - Water availability

B. **Climatic**

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C. **Technological**
  - Production oriented
  - Consumption oriented

D. **Political and Institutional**
  - Government stability
  - Internal market structure
  - Emphasis on agriculture
  - Embargoes

E. **Demographic**
  - Growth rates
  - Absolute increases
  - Urbanization

F. **Economic**
  - Income growth
  - Input price and availability
  - Interest rates
  - Exchange rates

Assumptions must be made regarding these and other factors. Given, say, a 10 year time perspective I would group assumptions along the following lines.

Assumptions

1. Well Founded
   eg - Population growth rate
   - Land availability

2. Informed Guesswork
   eg - Economic growth
   - Technology

3. Faith and Hope
   eg - Politics
   - War

If the time period is very long then nearly everything falls into the "Faith and Hope" category. Also, it should be fully recognized that the list of factors considered may not be complete and that assumptions regarding these factors are bound to change, particularly those in the "Faith and Hope" category. Accordingly, long term projections are most meaningful if they are revised on an on-going basis, i.e. revised with our changing understanding of underlying factors and the relationships between these factors.

Long term studies

There are numerous examples of long term studies which are available to the general public. Organizations which have carried out such studies in recent years include the World Bank, FAO, the International Wheat Council, OECD, the Office of the President of the United States **(Global 2000)**, International Food Policy Research Institute, government agencies (eg USDA - USA; CIA - USA, Agriculture Canada - Canada, Ministry of Agriculture, Forestry and Fisheries - Japan). Commercially, forecasting services through consulting firms such as Chase Econometrics, Wharton, and Data Resources Inc. are available to subscribers. The methodology utilized in these studies can vary considerably and is often highly quantitative. Great care should be taken in interpreting the results of these studies. In addition to public agencies and private consulting firms, studies may also be carried out by private firms for internal planning and strategy. These studies are often not available to the public.

Overview

On balance, most of us would feel most comfortable if an analysis of these factors revealed a future world in which trade were expanding, incomes were rising and prices of food were stable and affordable yet high enough to provide producers with the incentive to produce. Unfortunately the world is not so clear cut.

Climate is a major question mark. There are strong arguments that weather in the fifties and sixties was unusually stable and favorable. The past decade has had its share of drought and bumper conditions, so I am not sure that this argument still holds. As for the future, there may be changes in climate due to such factors as the "greenhouse effect." The impact of such potential changes on agriculture, however, are not clear.

Of the **physical resource** factors, most major land resources yet untapped are marginal or inaccessible. Soil fertility is decreasing with intensive cultivation, and in many regions of the world lack of water is viewed as the major limiting resource. There is no question in my mind that the availability of physical resources is a bullish factor for the grain trade.

Demographic factors ultimately provide the major driving force for increasing demand. The rate of population increase may decrease slightly in the next decade or so, but it will remain very high. Population is currently increasing each year by 80 million people and this figure is expected to increase to 100 million by the year 2000. The absolute increase of population is projected to increase due to (1) a continuing high number of births per female and (2) the current age distribution of most developing countries. The high birth rates of recent decades mean that an increasing proportion of females fall in the childbearing range. In addition as the wide population base moves into adulthood the per capita calorie and protein requirements increase.

The driving force behind **technological advance** is the incentive to substitute relatively abundant factors for relatively scarce factors. Therefore, it is a constant race in this modern world between the potential scarcity caused by ever increasing world population on a fixed or diminishing resource base and production increases brought about by technological advance.

On the **political** front, we must resort to faith and hope. I think we must assume that a political environment will exist that is conducive to continued trade expansion. Given this assumption, the realized level of trade and the mix of commodities will depend largely upon **economic factors**. Income growth is the critical factor which ties together the surplus producing capacity of some countries brought about by technological advance with the potential demand of other countries brought about by increasing population on a dwindling resource base.

In a scenario of high economic growth over the next decade, volume of trade should increase substantially with growth in feedgrains trade outpacing that of wheat. In a low economic growth scenario, trade growth would be lower and the mix of trade would shift in favor of wheat. The recession of the early 80's has very visibly demonstrated this close linkage between general economic factors and growth of the world grain trade.

Due to time limitations, I would like to restrict my comments to expectations regarding volume of trade. A more complete discussion would include price expectations and a breakdown of trade by country, by quality classes, and so on. My approach will be to examine several long term studies beginning with the original trade projections of the Canadian Wheat Board in 1976 which served as a basis for the 30 million tonnes export target for 1985.

Grain Trade Growth

	Wheat (mln tonnes)	Coarse Grains
1960-64	48	31
1965-70	53	39
1970-74	60	58
1975-79	72	88
1980-84	100	98

Comments

1. Trade has fluctuated considerably on a year-to-year basis. However, generally, trade has been growing on a very steady basis over the last two decades.

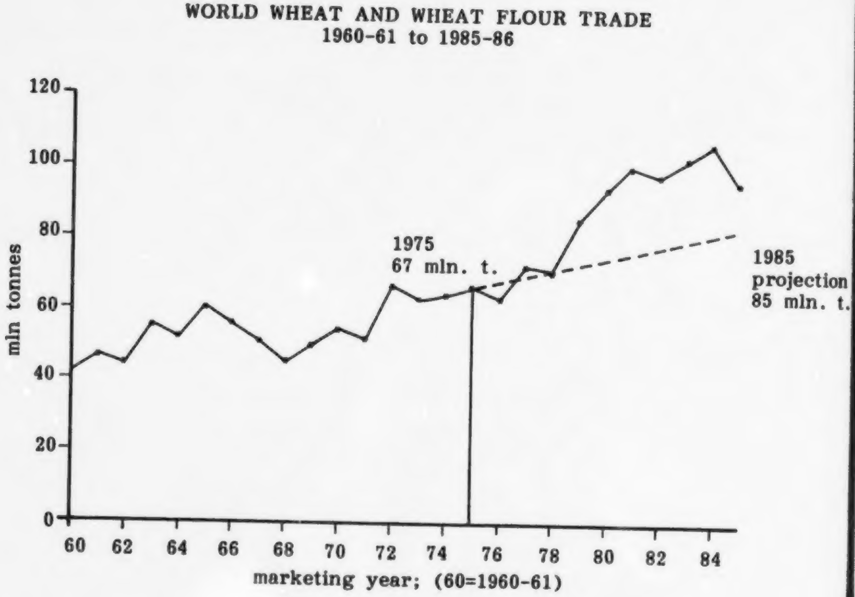
2. Taking the average figures above, this growth amounts to about 4 percent for wheat and 6 percent for feedgrains over the period.

3. General market slumps occurred twice in the past quarter century:

   (i) In the 1966-69 period when trade in wheat tumbled from 61 million tonnes in 1965/66 to 45 million tonnes in 1968/69 and trade in coarse grains fell from 42 million tonnes to 37 million tonnes in these exact same years.

   (ii) During the current period, wheat trade reached 107 million tonnes in 1984/85 and is expected to fall to about 91 million tonnes in 1985/86. Coarse grain trade fell from 108 million tonnes in 1980/81 to 90 million tonnes in 1982/83 where it has stagnated.

CWB (1976) - Wheat to 1985



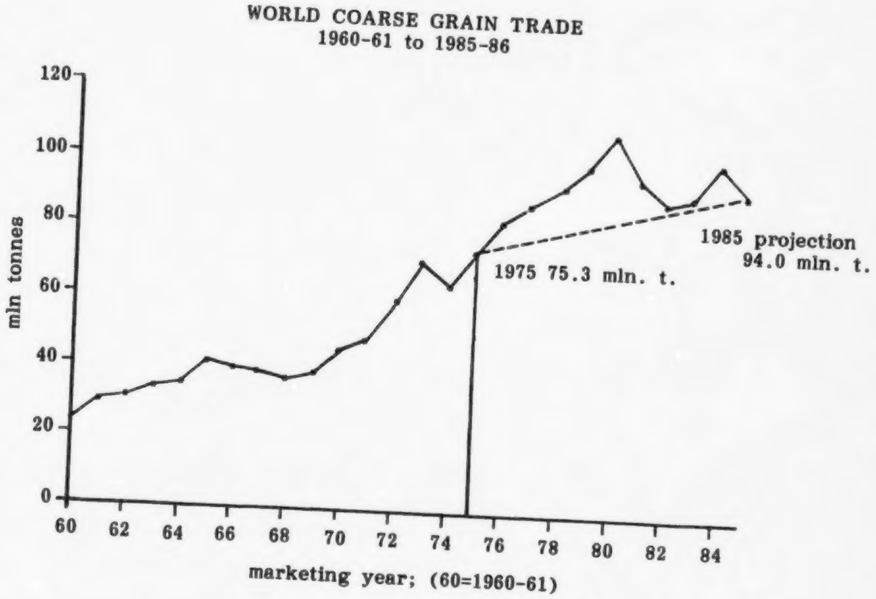
Comments

1. These projections were carried out in 1976 as background for the target approach discussed earlier.

2. When the projections were first publicized in (1976) they were criticized within Canada as being unreasonably high. Yet by the early 80's, due to the rapid growth in trade, they were seen to be far too low. Now, as it turns out, they were unreasonably close to the mark.

3. To a large degree, the buoyant expectations in grain exporting countries in the 1970's created an excess supply problem in the 1980's. Policies in the U.S. and EEC exacerbated this trend.

CWB (1976) - Coarse Grains to 1985



Comments

1. The recession of the early 80's moved coarse grain consumption back in line with the original projection. Due to large USSR imports in 1984/85, trade again rose above the projection but with lower Soviet imports in 1985/86, realized trade will be very close to the original projection of 94 million tonnes.

2. The recession did not affect wheat as much as feed grains. This indicates that in hard times, grain, directly consumed, increases in importance compared to feeding it to livestock.

3. Volatility of feed grain trade is mainly the result of fluctuating USSR requirements. The peaks of 1980/81 and 1984/85 coincide with unusually high USSR purchases.

World Bank - 1985

Version	Wheat	Coarse Grains
	(mln tonnes)	
1978	93	98
1980	93	98
1982	112	152
1984	114	117

Comments

1. Up to the 1982 version the long term projections of the World Bank tended to be too low.

2. The 1982 version was unreasonably high for coarse grains. There are likely two reasons.

   (a) The high growth of coarse grain imports to 1981 by the centrally planned countries was simply projected forward and

   (b) Data for 1981 and 82 were not included. The 1982 results reflect the danger of using unqualified trend projections.

3. The unreasonable projections reported in 1982 were partly corrected in the 1984 version. These points are even more clearly illustrated in the case of feed grain.

World Bank - 1990

Version	Wheat	Coarse Grains
	(mln tonnes)	
1978	108	105
1980	108	105
1982	136	205
1984	121	138

Comments

1. Again, the projected coarse grain figure for 1982 seems totally unreasonable.

2. The coarse grain gross import figure in 1982 version for centrally planned countries is 80 million tonnes, up from the 1980 version figure of 17 million tonnes. A revision of this magnitude seems unjustified. The 1984 revision went through a similar erratic downward adjustment.

3. Overall, the World Bank projections indicated that considerable caution should be exercised in reporting such studies. The figures are basically trend based on relatively short time series data.

Private Studies - 1990

	Wheat	Coarse Grains (mln tonnes)	Total
Schnittker Assoc. (1982)	130	130	260
Chase Econometrics (1982)	115	143	258
Chase Econometrics (1985)	122	124	246
Trend (1965-84)	118	133	251
Trend (1975-84)	140	114	254

Comments

1. Firms such as Chase Econometrics, DRI, Wharton and Schnittker Associates generate long term forecasts either periodically as special studies (Schnittker) or on an on-going basis (Chase). Methodology usually combines both modeling and expert opinion of analysts.

2. The 1982 studies were carried out before the full impact of the recession and debt problems of Third World countries were known. The impact of the recession is indicated in the revised Chase figure for coarse grain (1985).

3. For reference I have included the 10 and 20 year linear trend projections. Note the big difference in these two projections for wheat. This illustrates the point that trend figures by themselves do not mean too much. The results can change a great deal depending upon the time period selected. Also a linear trend is only one functional form to consider. The dramatic decline in wheat and coarse grain trade expected in 1985/86 would result in lower trend projections.

IWC (1983) - 2000

Importing Region	Wheat	Rice	Coarse Grain (mln tonnes)	Total
Developing	79	10	55	144
Centrally Planned	23	2	27	52
Developed	12	2	56	69
Total	114	13	137	265

(Figures may not add due to rounding.)

Comments

1. These projections reflect a 27% increase in grain trade as compared to 1980. The IWC Secretariat described these projections as a "middle of the road" course.

2. The wheat figure appears to be on the low side. However, it reflects considerable growth in developing countries and negative growth in centrally planned countries.

WORLD GRAIN TRADE

Market Year	Wheat 1/	Coarse Grains 2/	Oilseeds 3/	Total
		- mln tonnes -		
1960/61	41.9	24.0	6.8	72.7
1961/62	46.8	30.0	7.2	84.0
1962/63	44.3	31.0	8.2	83.5
1963/64	56.0	34.0	8.6	98.6
1964/65	52.0	35.0	9.6	96.6
1965/66	61.0	42.0	10.4	113.4
1966/67	56.0	40.0	10.8	106.8
1967/68	51.0	39.0	11.4	101.4
1968/69	45.0	37.0	12.3	94.3
1969/70	50.0	39.0	12.9	101.9
1970/71	55.0	46.0	16.2	117.2
1971/72	52.0	49.3	16.4	117.7
1972/73	67.0	59.2	18.2	144.4
1973/74	63.0	71.2	19.5	153.7
1974/75	64.3	65.2	20.2	149.7
1975/76	66.7	75.3	19.5	161.5
1976/77	63.3	83.9	23.6	170.8
1977/78	72.8	89.1	23.7	185.6
1978/79	72.0	92.9	28.4	193.3
1979/80	86.0	99.5	36.1	221.6
1980/81	94.1	109.0	31.4	234.5
1981/82	101.3	96.5	36.0	236.3
1982/83	98.6	90.1	34.8	224.7
1983/84	102.9	92.5	31.9	225.2
1984/85	107	101	33	241
1985/86(prelim)	91	93	33	217
1990 4/	118.42	132.76		
1990 5/	140.05	113.72		

1/ includes flour trade but excludes EEC intra-trade

2/ 1960/61 - 1975/76 on July/June basis
1976/77 - 1983/84 on October/September basis

3/ copra, cottonseed, palm kernel, rapeseed, soybean, sunflowerseed to 1978/79 (FAO); 1979/80 - 1984/85 - also includes peanuts and flaxseed (USDA)

4/ Trend (1965-84)

World Wheat Trade $X_1 = -153.38 + 3.02\ T$ $R^2 = .833$
$(-6.45)\quad(9.48)$

World Coarse Grain Trade $Y_1 = -227.24 + 4.00\ T$ $R^2 = .892$
$(-9.27)\quad(12.20)$

5/ Trend (1975-84)

World Wheat Trade $X_2 = -320.93 + 5.122\ T$ $R^2 = .919$
$(-7.51)\quad(9.53)$

World Coarse Grain Trade $Y_2 = -63.40 + 1.968\ T$ $R^2 = .398$
$(-0.93)\quad(2.30)$

Source: USDA - FAC - World Grain Situation/Outlook
USDA - FAC - World Oilseed Situation
FAO - Trade Yearbook

	Canadian Exports by Economic Region			
	Developed Market Economies	Centrally Planned Economies	Mid-Income Developing	Low-Income Developing
I Current Importance to Western Canadian Exports				
a) Wheat	moderate approx. 20%	large and growing 50-55%	moderate approx. 15%	small and erratic 10-15%
b) Barley	large approx. 35-45%	large approx. 40-50%	moderate approx. 10-15%	small and erratic 3%
II Demand Influences				
1. Population a) current	475 million	1.45 billion	760 million	1.8 billion
b) growth rate	low-stable or declining	low	moderate but declining	high
2. Income a) level	high	middle	low-middle	low
b) growth rate	slow to moderate	moderate	moderate to high	slow to moderate
c) income elasticity	low, declining	high, declining	high	high
3. Supply a) current level	high	high	low	low
b) growth rate	high (Japan-low)	moderate-erratic (China-high)	slow	slow
c) potential	high (Japan-low)	high potential	moderate	moderate
4. Policies a) consumer prices	high	moderate	moderate	low
b) producer prices	high	low	low	low
c) trade	high tariff barriers	high-central purchasing	moderate	low
5. Foreign Exchange	high	high to moderate	moderate	severe constraint
III Prospects for Growth				
a) Wheat	stable to declining	moderate-erratic	high	moderate growth
b) Barley	stable to moderate growth	moderate to high-erratic	high	moderate growth

Closing remarks

These examples indicate that there is general consensus that the international grain trade will continue to grow over the foreseeable future but not at the growth rates of the sixties and seventies. This growth will be concentrated in middle income developing countries. Furthermore, considerable year-to-year instability will continue as a result of production fluctuations in the USSR. In absolute terms grain trade growth from 1985 to the end of this century should still be sizeable. Whether or not this growth is accomplished within an environment of stable, rising or falling real prices will depend whether supply is comfortably ahead of demand as has been the case in the first half of the 1980's (falling real prices) or if demand is surging ahead of supply as was the case in the 1970's (rising real prices).

Trade of wheat and coarse grains by the early to mid-1990's can reasonably be expected to approach 250 million tonnes. This figure exceeds the implied figure of the IWC but is below that of the World Bank. Such growth in grain trade will require modest but sustained world economic growth. This growth in turn depends upon resolution of key economic problems such as the U.S. deficit and Third World debt.

The North American livestock outlook

C.A. Gracey

Alberta is endowed with abundant natural resources that, coupled with a correct perception about the need for a balanced livestock-grain agricultural economy; and supported by coherent public policy, including Canada-U.S. free trade, can become a dominant player in a steady and mature North American Market.

Within THE CONTEXT of this very timely and worthwhile Second Century Conference, I am quite sure that your interest in the North American Livestock Outlook is more sharply focused upon Alberta's place and role within the North American livestock complex.

If I were to offer at the outset a precis of what I intended to say, it would be this.

A Precis of this Paper

Alberta specifically and prairie Canada generally are admirably situated and endowed with an abundance of natural resources to become a major if not dominant livestock producing areas in North America.

However, Alberta and Prairie Canada cannot hope to achieve their full potential until western agricultural leaders recognize that a balanced livestock-grain economy makes more sense than an agriculture dominated by grain.

Alberta and Prairie Canada cannot achieve its full potential until, first of all, Canada has the sense and the courage to dismantle the policies that fracture our national market nor until Canada and the United States fully and unreservedly embrace free trade, at least, in the livestock sector.

Beyond that, to make a fourth and final paragraph of this precis, I would suggest that new expanded international markets will be worth pursuing but hard to win. Our main market, our most obvious market is the North American market, a market that promises steady but not buoyant growth prospects.

It is not necessary for me to point out to you that Western Canada,

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Mr. Charles A. Gracey, Executive Vice-President, Canadian Cattlemen's Associaton.

and especially prairie Canada, has not always enjoyed a fair deal in policy development and delivery. Before giving examples of that, which I shortly will, I will suggest to you now that farmers, ranchers, livestock and grain producers, especially farm leaders and most especially Governments both Provincial and Federal need urgently to clarify their vision and their concept about what western Canadian agriculture is all about. I say so because without vision and imagination there can be little progress.

Historically, when this province and its prairie brothers were young, the concept was one of development and the easiest most natural thing was grain production. That was an inspired and correct vision. But, as your agriculture matured the rightful role of livestock as complementary to crop production began to assert itself.

The idea of a balanced grain-livestock economy has gained wider acceptance and makes sense practically, economically and, most important of all, ecologically.

Men of limited vision have not seen this yet and this lack of vision in some high places leads to the present discrimination that exists in grain transportation policy against a struggling livestock industry.

I will, therefore, state, as an opening proposition, that unless and until the vision of a balanced livestock grain economy is embraced across western Canada, neither Alberta nor Prairie Canada can hope to realize its full and vast agricultural potential.

The decline of the prairie livestock economy

Now to get more specific, let me illustrate what has happend in the quite recent past. Between 1971 and 1984 Prairie Farm Cash Receipts from Livestock Sales declined from 44.4% of total farm cash receipts to 30.6% of total farm cash receipts. In the same period prairie livestock receipts declined from 34.7% of total Canadian livestock receipts to 31.7% of total Canadian livestock receipts.

In Alberta alone livestock receipts represented 58.2% of Farm Cash receipts in 1971 and only 44.8% in 1984, a rather ominous decline.

This admittedly gross data does imply that livestock agriculture has been declining in relative importance on the prairies, and has obviously been shifting eastward.

To back that up with more specific figures Alberta supplied 19.5% of Canadian hog slaughter in 1971 and only 13.2% in 1984. For Prairie Canada as a whole hog marketings have declined from 46% of Canadian totals to 26% today.

The figures are not yet as dramatic insofar as cattle marketings are concerned but that is not because the same forces are not at work. It takes longer for adjustments to occur in the cattle industry. If trends in hog production are not a sufficient warning, perhaps, the export of 90,000 feeder cattle to the U.S.A. from western Canada in the first half of this year ought to be.

In 1971, Quebec supplied 18.5% of Canada's hogs. By 1984, the share had grown to over 38%. Ontario, the other big player, stayed effectively constant, at 28 to 30%.

One cannot escape noting, in the slides I will present and the appendix tables to this paper, the persistent erosion of livestock production in Alberta and on the Prairies. As a matter of fact livestock production has declined slowly as a Canadian component (Table 1); Prairie and Alberta livestock production has declined as a component of declining Canadian livestock production (Table 2), also as a component of total Canadian farm cash receipts (Table 3) and finally, and most obviously has declined as a component of prairie and Alberta farm cash receipts (Table 4). A play on words would attach double meanings to the slides I have presented.

Focusing our attention once again on the Prairies and Alberta the slide or decline in livestock production means that prairie and Alberta agriculture is today a less well balanced livestock grain economy than it has been heretofore and I suggest that this is neither a desirable nor a longer term sustainable basis upon which to build second century agriculture in this province or this prairie region. It is most especially inappropriate in a present era of declining and uncertain world export opportunities for grains and oilseeds. It is an inappropriate trend inasmuch as it results in less than optimum utilization of this province's and this region's huge grassland resources, its capacity and competence in the area of cattle finishing, its proximate access to the U.S. market, its established ability to compete effectively in a North American livestock complex.

These numbers are so well known they scarce bear repeating. What bears repeating and emphasizing is that this shift did not occur in a vacuum. The prairies did not lose nor did other regions of Canada discover new regional economic advantages. The shift was largely **policy driven** and the principal elements of that were grain transportation policy and massive subsidization in a few other provinces.

Once more, I emphasize the fact that transportation policy for grains is built on the false premise that grain is the king of the prairies and is primarily for export into export or eastern markets.

I must be firm here and suggest that this is not an attitude that was created primarily in Ottawa or Eastern Canada, though they are not blameless. To a large extent it is the attitude of entrenched and short term grain interests, articulated by some grain industry leaders.

To maintain this attitude is nonsense at the best of times and nothing short of suicidal in the present global environment of shrinking and uncertain export markets for grains. A potential massive and primary market for grain exists here within the livestock industry and, unless policy directions recognize this simple reality, this market will continue to shrink at the same time as world markets for grain close down.

One is reluctant to describe industry leaders who cling to this view as short-sighted but regrettably no single word in the language is more appropriate. Self serving might be more appropriate but even the self serving are short sighted if they believe that their policies are not retarding the livestock productive capacity of this province and this prairie region.

We have, in short, by the application of inappropriate policy measures transferred the livestock production base from an area of regional economic advantage to an area of regional policy advantage. We have done so at public expense and because the Province of Alberta rightly refused to stand idly by, we now have another public policy entailing millions of dollars attempting to redress the wrongs of the first public policy. Only in Canada could such a grotesque situation arise. Pity.

In a recent article in Grain News, a prairie grain producer expressed the apparent view of too many grain farmers when he questioned whether we rally need a western beef industry. An, if we do, he added, can we afford to maintain it under the circumstances into which it has allowed itself to sink. "It is obvious," he concludes, "we could get along very well without it." This is the dangerous and ill informed view of the grain monoculture mentality. I was quite unaware until he "corrected" my views that the beef industry represented a much greater drain on the public purse than does the grain industry. His arithmetic suggests that during the preceding 9 years, the western cattle industry has cost the country close to $500 million out of pocket. My response to that is that in no ten-year period has the cost of public support to the cattle industry equalled the annual cost to the taxpayer of the grain industry.

It is evidently fair ball to allow the perpetuation of ancient statutory rates on grain transportation, then to redress freight rate increases with a $600 million annual subsidy and then to carp about some entirely modest programs for cattlemen.

I would not dare suggest that we put the writer's theories to the test by abandoning the cattle industry on the prairies but, if we did, he would soon appreciate the serious decline into which prairie grain production would be plunged. Remarkably he holds by the Canadian Dairy Commission as a model to emulate - a Commission that annually costs the Canadian taxpayer over $300 million.

Our self inflicted policy wounds might be tolerable but for the sad fact that the transfer of our productive base from areas of regional economic advantage to areas of regional policy advantage not only cause unnecessary public expenditure but render our livestock industry less competitive internationally.

In my roundabout way, I've identified two interrelated issues, the resolution of which are vital to the future of Alberta as a major livestock producing province.

1. Alberta cannot realize its potential within Canada until we dismantle the interprovincial trade barriers that arise out of the fractured provincial policy scene. We face the task of restoring the national unity and national integrity of our livestock markets in order to allow regional economic advantage to hold sway. A major

step is being made even now in that direction and the leadership of Alberta in that endeavour to create nationally uniform tripartite stabilization policies for cattle, hogs and sheep has proven vital to that process. For many years Alberta and Ontario have patiently eschewed the easy route of meeting and matching the programs that have emerged in other provinces and it is my belief that that patience and good judgement is about to be rewarded.

2. Alberta cannot realize its full potential within the North American livestock complex unless and until Canada embraces wholeheartedly the concept of full free trade in the livestock sector with the U.S.A.

   It goes without saying that Alberta is admirably situated and endowed with resources to access the western and North Western U.S. market with livestock and livestock products.

I will not dwell on this question of free trade because I realize that later on in this program Chris Mills will discuss the subject more fully from a livestock and agriculture perspective. I will only say that this issue is vital to not only Alberta's agricultural future but the future of Canadian agriculture.

Some critics will already be reflecting, I suppose, that the decline in prairie and Alberta livestock production is the inevitable result of steadily declining demand for livestock products, and that grain production is merely and thankfully taking up the slack. This apparent decline in demand for meats is simply not true in either Canada or the U.S.A. as the following two slides will quickly attest. Per capita consumption of total meats is at or near a record high and has plateaued at current high levels for the past several years. It would appear rather that the prairie share of that total livestock products' pie has been diminished.

It is tempting, of course, to suggest to a receptive Alberta audience that your livestock future is secure because the U.S.A. will soon need Canadian production. I could explain, as others have, the increasing shortage of water in the western plains, the higher cost of accessing that water, population pressure and growing demand. There may even be a grain of truth in those rationales for a belief that Alberta can expect stronger U.S. demand for our livestock production.

But I am persuaded that this is largely a false premise. Years ago, in fact, in the early 1960's, I heard the stories that the U.S. grasslands were full to capacity, could not expand much more, that cattle ranches could not possibly be financed in a generation transfer. None of these assertions was true then and are no closer to the truth today. In fact, both U.S. and Canadian agriculture are marked by excess capacity both in the grain and livestock complex.

But that is no reason for Albertans or Canadians to be discouraged. Rather, I will define a firmer, more rational foundation on which to base the Alberta and Canadian livestock industry.

That basis is and will be our capacity to compete effectively with the U.S. producer in an integrated North American livestock market.

That proposition in turn suggests a major and vital policy initiative to ensure a competitive Canadian livestock industry. For Governments, that means lowering, inasmuch as possible, those input costs over which Governments have control to ensure that our public costs are not out of line with those of our competitors. I refer, of course, to land taxes, lease rates for crown lands, public utility costs, fuel taxes and import tariffs on the means of production. I refer also to tax policy and credit policy.

It is quite unrealistic to believe that the livestock industry in Alberta can expect to find salvation in price levels that are materially higher than U.S. price levels. That is a scenario wholly inconsistent with the idea that we will remain a major exporter of livestock production. If that is so, if follows, by simple deduction, that our production costs must be fully competitive with similar costs in the U.S.A.

I would, therefore, suggest not only to the Government of Alberta but to all provincial governments and the Government of Canada that it is in the provincial and national interest to deliberately review those elements of production costs over which Governments exercise control and to systematically bring those costs into line with similar costs that pertain in the U.S.A. I would further suggest that inasmuch as this can be accomplished over time, we can and must begin to dismantle those subsidy programs which may, and from time to time do, compromise our access to the U.S. market. This might even include a phasing out, over time, of the recently won tripartite stabilization schemes or, possibly a lowering of the levels of support they now provide.

While I have strongly favoured the option of Canada-U.S. free trade for the livestock sector as the only sensible option. I would add, as preachers do at wedding ceremonies, that the step is one not to be taken lightly. If the livestock industry itself is prepared to embrace free trade and in so doing support the expressed policy of the Government of Canada and Alberta, it behooves them as well to ensure that we play on a level playing field as regards our industry's package of costs that are determined by public policy. Do not give us free trade without giving us the cost environment in which to succeed.

I was asked, however, to talk about the future rather than the past. I have, however, tried to clarify the past for the simple reason that we must understand the past and present in order to exploit the future to best advantage.

Alberta's livestock future depends upon an assessment of the constraints that have recently conspired against Alberta livestock production and a determined effort to remove or neutralize those constraints.

A mature market

But there are a few final and vital points I want to make about the future for livestock production in Alberta, the Prairies, Canada and North America.

In the first place, buoyant growth in demand for livestock products within North America is not a responsible assumption. The reasons for this are well understood and are two in number.

1. We have already reached a consumption plateau that satisfies all nutritional requirements and gastronomic desires. We will not, I suggest, consume any more meat per capita than presently.

2. Population growth is less than 1.5% per annum and, in consequence, the total population is shifting rapidly up the scale and, as average age advances, nutritional requirements do decline.

These are the classic patterns of a mature market and a mature industry.

Rather we will see more intense competition among meat animal species for maximum share of a finite meat market and this competition will be won or lost on the basis of relative efficiency and relative consumer preference.

If I can digress for just a moment to talk about the cattle industry as one of the major meat components the future for Alberta is bright in the sense that the cattle industry has much more unexploited potential to enhance efficiency and productivity. That's a polite way of saying cattle production has lagged seriously in the race for technology transfer.

Alberta's success will also be determined by how competitive Alberta now is or can become vis-a-vis other provinces and the U.S.A.

It is necessary also to discuss our livestock industry and its potential within a larger global context. I am more conversant with the global beef situation than with hogs and poultry but suspect that observations based on beef are relevant so let me refer to beef.

The global beef market is presently and for the foreseeable future in disarray. To simplify, I observe three distinct sorts of world trade channels.

1. There is the basically North American Oceanic trade channel wherein North America is principally an importer. This channel is, however, characterized by relatively free trade at real market prices.

2. There is a second channel dominated presently by the EEC whereby the EEC seeks to export surplus community product by means of export subsidy and seeks at the same time to severely restrict imports.

   The effect of these policies is to crowd normal or traditional suppliers out of third markets inevitably depressing prices in the freer trade channel by restricting their market opportunities.

   A stop gap element in this second and major trade channel is the occasional panic selling and opportunistic buying of product by the U.S.S.R., the last recent major deal consummated as low as $0.38 U.S. per pound, I understand.

3. A third and massive trade channel exists today both in fact and more importantly in unrealized potential. I refer to the massive beef producing and exporting potential of South and parts of central America. We are insulated from the effects of this huge area presently by two factors namely; the existence of foot and mouth disease in most areas and the political instability that exists there. Both problems are solvable over time and we should be alert to the potential that would then arise.

Putting all of these things together, I would attempt to offer the realistic judgement that by all odds your best and most promising potential in order of importance is:

1. To exploit fully your regional economic advantage within the Canadian market.

2. To exploit fully your economic and natural advantage within the North American market.

3. To remain alert to but not mesmerized by potential offshore markets in areas such as Japan, Korea and a small handful of others.

As we look forward to the second century for this province as a major livestock producer, I again draw attention to our options. Alberta, prairie and Canadian livestock production will face either a future in which our livestock production is affirmed as an integral part of a North American livestock complex or we will retreat even from the position we enjoy today to a purely national or domestic livestock industry. The enormous distance between these two most probable scenarios measures the difference in our opportunities. For one thing, the pursuit of a North American stance, if understood and embraced by producers and Governments, will bring a severe discipline and early end to the interprovincial nonsense that has blighted livestock production for more than a decade now. On the other hand, if we are foolish enough or too timid to seize upon this great opportunity and let it slip through our fingers there will remain no impediment to the progressive socialization of our livestock industry. If the American market does not exist as a real opportunity, no discipline will remain to prevent fierce interprovincial competition for a growing share of a quite limited market. The next and logical step will be supply control, provincial quotas and all the costly and counterproductive trappings of a regulated market place.

Livestock producers as well as Governments must see this. Thanks to the Macdonald Commission report, to which we had input, the idea we have long espoused for free and fair trade with the U.S.A. in the livestock sector has now been elevated to respectability. The only impediment now appears to be the fear of the industrial province of Ontario, my home province, and the panic of union leadership. We must, in the interests of Canada, address and seek to neutralize these concerns. At least, insofar as our livestock industry is concerned, my thesis is, that given the choice between free trade and a merely self-sufficient domestic market, the advantages of free trade vastly outweigh the false security of serving only our domestic market.

Conclusion

Alberta has a solid opportunity to play a larger role in the livestock production arena of Canada and North America.

To realize this potential, Alberta needs to have a clearer vision of the nature of its agriculture which I submit must be a well balanced grain-livestock economy. To realize this potential, Alberta farmers and their Government must address and resolve the policy constraints that mitigate against the full flowering of the livestock productivity of this province and, indeed, this prairie region.

Vital to your future is the realization of a sectoral free trade agreement with the largest meat consuming nation on earth, the U.S.A. No other nation would, given the proximity endowed on Canada, be so hesitant and diffident about seizing upon this natural geographic opportunity.

There is work to be done in the policy field and in the production field. The role that Alberta agriculture will play, in this your dawning second century, will depend greatly on what you do about it NOW.

Table 1. Composition of Farm Cash Receipts 1971 vs 1984

Canada	Percent	
	1971	1984
Livestock	58.1%	48.3%
- Cattle	23.6	17.2
- Hogs	8.8	9.2
- Other	25.7	21.9
Crops	38.6	48.2

Livestock production has declined in relative importance in Canada while crop production has increased.

Table 2. Prairie and Alberta Farm Cash Receipts as a Percent of Total Canadian Farm Cash Receipts Component Contribution

	Percent			
	1971		1984	
	Prairies	Alberta	Prairies	Alberta
Total	45.4	17.5	50.0	19.3
Livestock	20.2	10.2	15.7	8.6
- Cattle	12.0	6.4	9.2	5.4
- Hogs	3.9	1.7	2.6	1.2
- Other	4.3	2.1	3.9	2.0
Crops	24.4	7.0	33.6	10.4

Table 3. Composition of Prairie and Alberta Farm Cash Receipts 1971 vs 1984

	Percent			
	1971		1984	
	Prairie	Alberta	Prairie	Alberta
Livestock	44.4	58.2	31.4	44.8
- Cattle	26.4	36.5	18.4	28.1
- Hogs	8.5	9.8	5.3	6.4
- Other	9.5	11.9	7.7	10.3
Crops	53.8	40.0	67.3	53.9

Table 4. Component Prairie and Alberta Farm Cash Receipts As a Percent of National Total

	Percent			
	1971		1984	
	Prairie	Alberta	Prairie	Alberta
Total	45.4	17.5	50.0	19.3
Livestock	34.7	17.5	32.5	17.9
- Cattle	50.7	27.0	53.5	31.5
- Hogs	44.0	19.5	28.2	13.2
- Other	16.8	8.1	17.6	9.1
Crops	63.1	18.1	69.8	21.6

Table 5. Manitoba - Saskatchewan - Alberta Farm Cash Receipts

	Manitoba		Saskatchewan		Alberta	
	71	84	71	84	71	84
% Total Farm Cash Receipts	8.1	9.6	19.7	21.0	17.5	19.3
Livestock as % of Total	4.3	3.3	5.7	3.7	10.2	8.6
Cattle as % of Total	1.9	1.3	3.7	2.5	6.4	5.4
Hogs as % of Total	1.1	0.9	1.0	0.5	1.7	1.2
Crops	3.6	6.1	13.8	17.1	7.0	10.4
% of Prov. Farm Cash Receipts						
Livestock	52.4	34.5	29.0	17.7	58.2	44.8
Cattle	23.0	13.2	18.8	12.0	36.5	28.1
Hogs	13.8	9.7	5.2	2.3	9.8	6.4
Crops	44.6	63.7	69.8	81.2	40.0	53.9
% of National Component						
Livestock	7.3	6.8	9.8	7.7	17.5	17.9
Cattle	7.9	7.4	15.8	14.6	27.0	31.5
Hogs	12.8	10.0	11.8	5.1	19.5	13.2
Crops	9.4	12.7	35.7	35.5	18.1	21.6

Prospects for adding value to farm products

Howard Harowitz

When I was first invited to speak this afternoon, I thought well that's not too difficult, heck forecasting a hundred years out, second century, that's not much of a problem. It was when I found out that in fact it probably made more sense to limit my remarks to what was likely to happen over the next 15 to 20 years, that I started getting nervous because then I could start being held accountable for my comments.

Notwithstanding some of my reservations, let me give you a context in which I would like to offer my comments today and I hope it is what you were expecting; if not, let me revise your expectations quickly. I see my role this afternoon is to talk about what happens or what some of the opportunities are beyond the farm gate in food processing in Alberta. Many of my remarks are based on in fact a number of studies we have done specifically in that area, mostly on behalf of the Alberta provincial government. In looking at opportunities for enhancing this sector of the economy in Alberta, what are some of the things that can be done? So we will be focusing on the food processors per se and opportunities in that sector. But having said that what I would really like to do is in fact open the discussion up to a broader context and talk about the interdependencies or interrelationships of that chain from producer through processor through the distribution channels and finally to the consumer. That's generally a kind of linkage that is well understood in most industrial sectors; in food processing it is particularly important because each of these points along the way plays such an important role in shaping the kinds of opportunities which are most attractive.

What I would like to do is perhaps change that perspective from one of the linear relationship from producer to processor to distribution channels and ultimately the consumer into something more of a spontaneous relationship which frequently portrays each of the sectors as having a number of influences upon and being influenced by each of the other sectors and that really to look at the food processing sector on its own would be to miss some of the major messages and to key issues would, I think, base the sector and which must be understood, and in

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that context then, the food processor can be looked at.

So what I want to do in fact is really try and draw some stories about what's going on in each of these areas and how they interrelate with each other and ultimately begin to point some direction towards opportunities for adding value. If you are looking to hear even one man's opinion on the latest opportunity being pheasants, or some enhanced pickle product, you have come to the wrong place. I offer no such suggestions.

What I am going to do is talk about some of the key issues and forces acting upon this market to describe the complexion of what might be some interesting types of opportunities. So let me move on and, in fact, having said all that start at the end if you will, of that long chain - the consumer - and work backwards through to ultimately end up with the producer.

What are some of the key issues facing the consumer? Let me break these issues into three categories - demographics, technology and social issues. Dealing first with **demographics** - one of the key issues is slow population growth. When we look at the '60's and '70's, the population growth in Canada was averaging around 1 to 1.2% per year and Alberta fared much better primarily due to the tremendous influx of people during that period, so that population here in Alberta was growing at 3 to 4 per cent average rate per year. What do we see for the future? A dramatic change - down to something under one per cent per year on an average for Canada as a whole and something in the two per cent range say for Alberta. What does that mean? Well, the immediate implication is fewer mouths to feed - not in an absolute sense perhaps but in a rate of growth sense for sure.

But if we look back at what's been happening in the 60's and 70's there was a period of strong capital investment in the food processing sector in the west that was primarily what I would call the branch plant mentality. Major processors from the east were cloning plants out west to produce a similar range of products to serve what appeared to be a very fast growing and attractive western market. Not to be here seemed to be problematic coupled with the energy problem in terms of the increases in cost of oil and, therefore, transportation costs; there seemed to be a sense that rationalization of transportation costs was also a major goal to achieve and hence again a reinforcement of what I call the branch plant mentality. I don't think we are going to see more of that. I think the problem has become realized by most that the population base just isn't here in Alberta or in western Canada to stimulate that kind of branch plant mentality. There just aren't the mouths to feed.

Along with that, we have an aging population. With low birth rates, with the aging of the baby boom, with lower household formation rates, the population is getting older on average. Now the population in western Canada or say Alberta in particular is probably on average about 10 years younger than the Canadian norm, but it is still aging. And as people get older, they eat less. The caloric intake then per capita is declining slowly and as well as that there are some changes in terms of the kinds of foods that are being eaten. Things that are easier to digest, a trend, for example, away from the red meats to the poultry products or the like. These are the kinds of things that are long range and I think basic fundamental structural shifts that are occurring as a result of the demographic issues.

Another thing - squeezed incomes. Certainly during the early '80's, I am sure all of us in this room will bear personal witness to the phenomenon of squeezed incomes and along with squeezed income a reduction in absolute wealth. House prices plummeted, and many of the paper gains we thought we had turned into realized and/or paper losses; we aren't doing as well. We don't have as much money to spend. We have recently seen, this year and next year, probably more of the same where real wage increases, that is to say, net of inflation will probably be positive but moderate - certainly not at the levels that we have experienced in the '60's and '70's and, even those small modest gains that we will see are really a lot of catch up that has been long overdue, at least from my personal perspective it has been.

So with less money to spend, people are being more careful, more value conscious, and I think that has an impact on the kinds of offerings we provide to customers in terms of food or anything else. We probably have all been through the experience of doing it ourselves or seeing it where the shopper walks through the supermarket and loads bulk food products or no name products into a shopping cart to save money and what does he do with the savings? Blows it on Perrier water. And I think what we are seeing is not a contradiction but in fact a sophisticated consumer who understands for his own purposes where the value for money trade-offs are; he is willing to economize on the products that for him don't matter as much and with those economies splurge and indulge himself, - pamper himself - on the products that he thinks are worth having.

So we are developing a two tiered consumer. One who is looking for economy where it matters less and to specialized real value added, be it psychological or real value, in other products. And food is a perfect opportunity for catering to in fact both of those kinds of tastes amongst our consumers. Finally on demographics - female participation. There is some general good news in that, in the context of serving to reverse some of the squeezed income problems as we move to more dual income families. Some of the squeezed income problems, therefore, are alleviated to some extent giving a family unit a little bit more discretionary income to play with. The other thing that is happening because of female participation is an increased importance of convenience foods. With both parents in the work force there is less time and energy available for preparation of foods in the home and what we see certainly in the recent past and I think we are going to see more and more of this is consumers are going to be looking for products that offer them greater convenience, both in terms of portion packaging, in terms of partially cooked foods, frozen foods that are heat-and-serve types, and secondarily, a structural shift to an ever increasing percentage of the caloric intake coming from restaurants as opposed to food prepared in the home. Food processors need not limit themselves to a context of looking for opportunities in the retail sector. I will talk more about that.

Certainly the restaurant and food away from home sector is something to look at. So I don't see that as good news or bad news - I see it as a change and, therefore, can call it a change of opportunity.

Technology - there has been a lot of change that has provided consumers an ability to change their taste. Things like controlled atmosphere storage for fresh fruits and vegetables, improved transportation methods. We have seen a tremendous change in consumption patterns away from processed vegetables and fruits to fresh consumption year round. And I think there will be more of that. I certainly don't see a swing back the other way. Microwave oven technology is another major change that has happened and we have seen the impact that has had in terms of frozen product versus canned. The canning industry is for all intents and purposes, to my way of thinking, with some exception certainly, but undergoing a very slow and painful period of decline and ultimately death in many sectors.

Social changes - health and nutrition. We have seen all of that in terms of Participaction, the jogger, the bean sprout phenomenon, all of those other good health food things that have been going on. I think we are going to see more of that by way of some of the basic products which are being eaten. Again that, I think, is part of the explanation of the move away from red meats to the white meats. But I think one of the impacts that we have just begun to see and I think is going to be just a major, major impact upon the types of products which are produced is what I would call the "ingredients phenomenon". As well as the shift away from one type of food to another, people are going to be ever more increasingly aware and concerned about the additives and ingredients that are going into processed foods. I can see that in terms of government legislation as well as the consumer's own exercise of the invisible hand phenomenon in terms of their product selection. But now here again we start looking at that integration along the whole cycle. It is not just what the consumer is going to be doing. This goes right back to the level of producer. We are dealing with one company right now - offshore company in the research and development stage that believe they have a hormonal product which will significantly increase the weight gain to feed ratios for cattle. My sense is that any advances in that area will have to have from a business perspective a very short pay back period because I think the time during which the consumer is going to go for hormonal changes and additives to food products as opposed to breeding and natural ways of controlling a product. I think we are going to see a greater sensitivity to that and there is going to be greater emphasis to natural as opposed to hormonal product. Now that is a personal opinion which many of you may disagree with but I offer it.

The other thing in terms of social is what I call "buyer sophistication". I think we are seeing a more sophisticated buyer in terms of people with more disposable income, again coming back to that value for money kind of relationship. I don't see the need, for example, for a processor produce yet another Heinz pickle. But, on the other hand, produce a real quality dill pickle, wrap it up in a nice $5.00 oak cask, and you've got a product.

So, slowing demand in terms of total caloric intake, a sophisticated and educated consumer, spells opportunities along the lines of specialty products, filling emerging or unfilled needs that in many cases may be transitory and here I caution you that today's winner may in fact may turn out to be tomorrow's disaster. There is nothing worse than being a follower in a me-too product in this kind of world of specialty because by the time you get there the fickle consumer has probably changed his tune.

That is the "who" and the "what". Let's talk a little bit about the "how". And that is where we get into the distribution channels. How are people purchasing their food and what about the changes in that in the future? First, let's talk about retail as being a sector and differentiate that then from the institutional or the foodservice sector which is institutions, fast food, hotels, and restaurants. Now, that alone becomes then a two tiered market - the market at home and away from home. But standing in between the processor and those sectors is the distributor and I will come back and talk on the distributor in a minute after I talk about retail versus the food service sector.

In terms of **retail**, what are the key issues? One is the buying power of the retail chains. Here in Alberta many of you have heard this story, and I am not going to spend a lot of time on it. The market dominance of one chain - Safeway - in terms of its position in the market and that kind of thing, while perhaps more pronounced in Alberta, is really a Canada wide phenomenon. There are a few major chains that control the retail market and that gives them strong buying power and an ability to exact demanding standards from the processor.

Getting listings can be difficult. Margins can be squeezed and slow moving products won't last on the shelf for very long. And that poses some problems and suggests that innovation in terms of new products for food processing is going to have to face up to that fact and develop a strategy which allows them to deal with what's going to be a slow and painful introductory process into the retail market.

Bulk stores in and of themselves I don't think represent a major phenomenon that is going to affect the kinds of opportunities available for food processors. But they speak to a kind of a situation that we see where, with the kind of slowing down in demand in total product, the shift is to a greater percentage of calories consumed in food away from home and hence not through retail outlets. The major chains are fighting a war which is primarily a market share war as opposed to an overall net gain war. And what they are doing, therefore, is finding new and creative ways to present their product in order to gain market share. And that is what we see in terms of things like the Superstore introduction here in Edmonton and those kinds of things. They are games aimed at increasing market share.

With that, we are seeing a split again around the commodity or standard product versus the specialty product. I think that has implications for processing; again, "know your product". If you are offering a commodity product that doesn't only affect your own packaging but it is going to effect your positioning in the store. Where are you looking for shelf space? If you are a specialty product, you may be looking for space in the international section or the freezer case, but not on the cereal shelf. And our experience says that it is a lot easier to get an experimental listing with the large chains in their international food section or their freezer case section. Chances are you ain't going to move Cheerios out of the way to put your cereal in its place. So again, I think that what's happening in the retail section, to our way of thinking, puts you in a position of looking for new opportunities that are along the lines of specialty products and interesting innovation as opposed to yet another frozen niblets corn.

We found that the performance criteria of each sector in terms of distribution channels are very different. Here by the way I leave price out because the issue of having a competitive price to other products goes without saying. If you are not priced competitively you aren't going to sell. That is plain and simple.

Having said that, "what are the important success factors to crack the retail market"? First and foremost is the ability to generate consumer takeaway. The retail stores are basically in the business of generating sales per square foot. If you are taking up too much space and not generating sales you get delisted.

Now what they are looking for more and more is the processor to put money up towards generating that consumer takeaway. They look not only at the promotion budget of the processor for direct advertising but also moving to things like in-store co-op advertising and allowances on case lots and bulk purchases. What that says is if you have already got squeezed margins they are going to get squeezed even harder when they start looking at your marketing and promotion expenses. Which again argues well for some of the specialty products where you can command a slightly higher price and leave yourself a little bit of room to absorb some of those promotion cost items which are going to be demanded from you. Secondarily then to promotability is the issue of quality interestingly enough, because for the retail store they are not worried about monitoring your quality directly, they will let the consumer worry about that. The consumer is the ultimate arbitrator of the price performance relationship and if the consumer isn't buying your product then you get delisted. But the retail store doesn't have to be convinced of the quality per se of your product which is very different than when we talk about the food sector and we will come to that in a minute.

The last point on retail - having said all that and the difficulties that retail presents, keep in mind that it still represents somewhere between 60 and 75 per cent of the total food consumption in terms of the channel of distribution.

If you are looking for a product that requires some efficiencies of scale and long production runs - large volume items then - it is pretty difficult to look at that and not have as part of your basic strategy to be involved in the retail market. So it is not necessarily a great wide and open market to tackle but one which is very important for many strategies.

Restaurants - again the buyer's sophistication that I was talking about. The two income family, the convenience, the value for money. What those things tell us is that shift to consumption of food away from home will continue. That presents some opportunities for a processor to be looking at products aimed at that sector as opposed to the retail sector. But it is not only a growing market, it is a changing market. Some of the changes that we see are that the fancy top-tiered restaurants as a per cent of the total dollar spent in that market are declining dramatically. There is a strong upsurge in the ethnic specialty middle tier restaurant market. There is also an even stronger, and will continue to be stronger, surge in the fast food market.

What's interesting to look at in the fast food market is if you take a look at what fast food meant say five or ten years ago and what it means today, there has been a dramatic shift in the quality of offer and the quality of surroundings and the share of the purchase dollar that they are looking for. It is no longer the drive-in in the car, eat the hamburger with your date, and drive out again. It's the family experience. They are having you drop $15 for your family by the time you are in and out of what's called "fast" food. And it has been upscaled. It is the Japanese car phenomenon where they started with a small stripped down version and they are gradually adding more and more bells and whistles onto the car to trade the consumer up. The fast food industry is doing much the same thing very carefully and very successfully.

The kinds of products which will be innovative and new to the fast food market will be slightly more upscale, sophisticated products than your basic trimmed down hamburger on a bun with ketchup and pickles. The opportunity is there, work towards product innovation and looking for something new that is going to fit into that kind of a change in consumer behaviour.

As for performance criteria in the restaurant business, fast food places in particular have very stringent demands on unique formulations of product and exacting requirements for how that food will perform in their prep kitchens. What that means is to serve that market consistency and product quality are of paramount importance in your offering and reliability plays less of a key because there more and more they are moving to a single source distributor who has the worries of delivery schedules and what not. The processor must become concerned most with consistency and secondarily with the product quality.

When you move to restaurants and hotels the emphasis shifts a little bit and quality overrules consistency at the top end but again that is basically the story in which you have to offer a product which behaves with great consistency and meets their needs.

The last thing that is important to look at in this sector, is what I call the "kitchenless restaurant". More and more we are seeing as a way of saving labour that restaurant(s) are trying to shift as much of the preparation and the labour for food preparation out of the restaurant and back to the processor and we are seeing portion packaging. We are seeing partially cooked and prepared items even to the point in some cases of simply heat and serve in the restaurant and the restaurant is not becoming a place that prepares your meal and serves it you. It is becoming a place that serves your meal to you with the preparation done elsewhere. This represents a very important and exciting opportunity for innovation to tackle what is a growing market.

Institutions represent a slightly different story than the restaurant. Again let's come back to the issue of an aging population. As we get older we find ourselves in health care institutions more and more. We are going to see an increasing portion of the total food dollar going to feeding people in institutions. It is a growing market. The performance story there is slightly different. As opposed to a restaurant where its' raison d'etre is to have you come in and eat food; an institution is not there for the purpose of feeding you, it is there for the purpose of tending to your overall needs. In that context the foodservice portion is really a small piece, not necessarily small, but it is one piece of the total management puzzle for the institution. As such, when they look at things like your delivery schedule to the loading bay, what they do with inventory, labour saving, etc. they are going to have much more exacting standards than does the restaurant. You are going to be looking at rigorously scheduled delivery performance, much more concern with reliability of your product, and less worry about quality. After all, you don't exactly have the choice of whether you are going to come back to the dining room or not when you are lying in a hospital bed. So less worry about quality and more worry about reliability.

Let's move back then to that end position of retail versus foodservice and look at that all important distributor who is more and more sitting between the processor and those channels of distribution.

Let me just offer a few comments on that sector. It is a growing market, more and more chains, and certainly independents, and the foodservice industry is relying on distributors. Distributors in that respect start to behave very much like the retail sector. They are less worried about product quality. They will let their customers adjudicate quality. They are more worried about promotability. From many food processors what we are finding is that the economics of the distributor are that they are making their money in the promotions, the discounts, the case lot discounts and the like that are being offered by the processor. So there again in working through that channel one has to look for a product strategy in terms of costing and so on that leaves you room in a budget to absorb some of those kinds of volume discounts that are going to keep your distributor happy.

Let's talk about the **processor** as we move back in the chain. I rank the food processor community into two broad categories: the major producers and the regional/specialty processors. Their behaviours are quite different and here in Western Canada we have to be very much tuned into that because we are not at the centre of the major processor world.

What are some of the key issues for the major processors? First of all, chronic over-capacity that has been particularly true in the past number of years. I don't think that the problem has fully corrected itself yet. Capacity utilization rates are definitely up. That has come about to a large extent with a number of plant closings and plant rationalization. If anything, what we will see is more plant closings rather than new plant construction. The day of investment by the major processors in large amounts of bricks and mortar are pretty much gone by for quite some period of time.

The investment that will be going on for the majors is machinery and equipment, labour saving devices, cost efficiency devices, which will improve their product performance or their cost performance but that is basically improving existing operations. The bad news for Alberta is what ain't here now ain't going to be.

Second scale economies and I have already talked about this and this reinforces the point. There was a period of time when concern for cost efficiency looked at transportation cost efficiency. The soft oil prices have again, once we have absorbed the oil shock, and I mean the psychological shock, the move towards rationalization of transportation costs has taken back seat to rationalization of labour costs and in-plant costs. We are seeing a move by the majors to capital investment again for labour saving devices and approaches which look to long runs and efficiency of production, which again says that it is not bricks and mortar, it is not branch plants, and if there are opportunities for major processors in Western Canada, they are going to be very unique and special where being good isn't good enough. Being the superior, the best location, is all that will turn the tide.

Last thing on the majors is high promotion content. Because of the long runs one of the key items is going to be again given that the retail sector is so dominant and so important in total purchasing, that the majors have to have as part of their strategy selling at least a significant portion if not all of their food through the retail sector. Retail again is that promotability issue. It's high dollars being available for promotion costs of all types.

One of the best example of this is the Jello phenomenon. Jello holds undisputed market dominance in the gelatin dessert market. As far as I am concerned, and I will stick my neck out projecting this, they will continue to for however long the product exists in North America. Why? Because their market dominance in terms of share is about six times that of their closest competitor. If they are both maintaining the same marketing cost to sales relationship Jello is outspending its closest competitor by a ratio of about six to one on advertising. What does Jello do? They cut it back by half and they spend on a ratio basis half that of their closest competitor but they are still spending three times in terms of total promotion budget that of their closest competitor. And every once in awhile there is a shake up of one sort or another at Shirriff, and they decide that this is an absolutely unattainable position and it's time we did something about those Jello folks". They enlarge a major media campaign and if you think about your television habits about every ten years there is a whole lot of Jello advertising. What happens? Shirriff comes along and says they are going to take it to the Jello people, they bump up their promotion and they double it, twice what their equilibrium rate of marketing costs to sales ratio is. Well let's say they triple it. They are now spending the same amount as Jello. But it's killing them on the bottom line. What does Jello do? They say well let's go back to normal levels and they are now again outspending the Shirriff people two to one. Eventually Shirriff gets very tired and very hurt and bruised and things settle down to where they were before the whole thing started. Then it waits about another eight or ten years until there is new management at Shirriff and somebody says "this business with the Jello people has just got to stop". Anyway, the point of that long story is to say that if you are looking at competing in this sector you better have the bucks to go along with the marketing side of things as well as simply having a good product.

What I think that means for the primary types of opportunities which are going to be available in Alberta is going to the be the regional specialty processors. We are looking at opportunities to fill the niches that are left by the majors and I will come back to that in a minute. What are the characteristics. When you are talking about regional and specialty processors, you are talking about capital which is less mobile. You are talking typically about an entrepreneur living somewhere and coming up with an idea and deciding to put it into business, as opposed to a business looking for a place to live. I guess what I am saying is that the major source of innovation and new product and new growth opportunities - the human capital for that is sitting in this room or upstairs at the other session. This is the group that is going to produce the majority of the change and growth in the food processing sector of Alberta. Not people that aren't here now.

Smaller scale operations, more flexible, cost efficiency of a different kind. Here it is more cost efficient being able to react to change, sense a consumer's need, change with it, reformulate a product and provide on a cost efficient basis that very specialized product for the foodservice sector or the specialty dairy case or wherever it might be.

Again, what that says is a need for closeness to the customer. This is a consumer driven sector of the economy and understanding the consumer and the distribution channels is going to be the key.

To put the processor issue into as concise a wrap-up as I can, I think what you have is a situation where the majors through a process of entrenchment and careful specialization (and that's not to say the majors aren't spending some money in Western Canada but it is in plants or specialty products where the plant out here might be the single plant serving all of Canada not a branch plant idea) present an umbrella under which the small competitor can find a spot. There are holes in that umbrella. There are unfilled, special, small consumer group needs that are not being met and innovation is going to come in finding those and carving out a place for specialty product to fit those needs.

Let me back up one more step then and talk briefly about the **producer**. Since there are many producers in here I am going to keep my comments very simple to avoid getting into a lot of trouble.

First of all, what do I see as being the key issues? One is physical conditions. Again I reiterate "good isn't good enough". In food processing best is all that counts. It is not good enough to say that we can grow an adequate broccoli for food processing. We either grow the best broccoli or we ain't processing it in Alberta. That is something that we are going to have to realize and accept with its full implications. Let's face it - compared to other places in the world Alberta has got some disadvantages with many agricultural products. The climate, the growing season are such that many products, where even if we can produce them, the quality doesn't match that which can be produced elsewhere in Canada, or the yields aren't as great and hence the unit costs are higher. These are things which don't speak well for the ability to look for some major innovations on the producer new product line.

Processor requirements - one of the things that we found in talking to food processors as well as producers and looking for opportunities in Alberta was both sides feel that there is definitely something less than the ideal relationship at the producer/processor level.

Farming for food processing is a different kind of experience than farming for the fresh or the export market. The processor insists in having a much heavier hand in the day to day operations of the farm. Everything from deciding when you plant to how much you plant, to when and how you fertilize, and how you harvest - these are the kinds of things which to a much greater extent move the processor inside the farm gate for many types of products that a farmer would otherwise simply say are just not tolerable from his perspective in running his own business.

For many sectors, it is not to say that means it's impossible because it is being done throughout the world, but there has be a realization that that relationship is one which must be built upon an alliance rather than an adversarial position and that's going to be a critical aspect of identifying innovations for product in Alberta.

Taste changes - again I bridge that long gap between the producer and the ultimate consumer. Matters of changing taste are going to be very important and the producer must understand these as best as his or her ability will allow. Let me give you an example that is across the border in B.C. but a very real example and hence one which I think is worth noting: the whole issue of the bail-out of the red grape growers in B.C. No one can fault the initial growers who some ten or fifteen years ago put in red grapes in B.C., because at the time it was just an inkling of a change in consumer trend but I sure have a lot of trouble with the producer who decided to put in red grapes two years ago when the change in consumer taste from red to white wine was well recognized, well understood and one which most people would argue is not going to reverse and go back the other way. Red grapes take a long time to end up finally having a harvest that is salable and then a much longer time still until you get your money back out of your investment in the first place. Someone who two or three years ago said "hey, the red grape business is something which is growing in B.C. I am going to be a me-too player" got into a lot of trouble. Again, the "me-tooism" is something that has to be watched out for and the producer has as much responsibility for his own sake in understanding the consumer as does anybody else.

The key is understanding the linkages between the producer, the processor, the distribution channel and the end consumer.

Let me talk very briefly about a few international issues because up to now I have been talking about the Canadian scene. I will talk about each of consumer, distribution channel, processor and producers in succession.

First the **consumers**. Basically there are two kinds of markets out there on the international side. One making a product formulated to the taste of the Japanese in terms of their standard diet or the American or whomever and there understand that the Canadian formulation may not taste very good to the individuals you are selling to. Now on the other hand, the flip side of that market is that with increasing international travel and increased and improved communications, people on all sides are developing a greater appetite and taste for ethnic and multinational foods. You can sell something that doesn't fit in to the Japanese diet as part of their staple as long as you understand that what you are selling is a unique Canadian product to the Japanese consumer. But your approach in terms of your strategy and what it is you are selling must be very different if you think of selling into the mainstream consumer market versus that specialty market of foreign product purchased offshore.

Increasing affluence amongst the consumers is important because what that means is that as we are doing a better job of meeting the basic food needs of consumers throughout the less developed and now emerging countries, and their income levels improve, they have more money and are gradually developing a taste for further processed foods and things that are a little bit more exotic than your raw commodity items. It is a growing market but one which has a lot of challenges and I am not going to spend time talking about the marketing challenges because that is for the next speaker if I ever be quiet and let him have a chance at the mike.

The final thing then is let's talk about **channels**. There are still key in any sector and it is important that if you are thinking about exporting that you realize that a major investment has to be made in developing the appropriate distribution channels.

Processors - just a reaffirmation that the problem of over-capacity exists equally if not to a greater extent in the States and particularly the

Northern U.S. which makes it more problematic. Competition is fierce internationally. World scale plants make some of our large Canadian national scale plants look very small indeed. We think there is a greater move to a dissemination of technology at an increasingly rapid rate so there is no longer a trickle down phenomenon of technology transfer it is the cascade phenomenon.

New technological advances are moving offshore to more labour efficient countries with increasing speed and we have some labour cost disadvantages in Canada compared to many nations of the world.

Producers - physical growing conditions. If Alberta is disadvantaged compared to say the lower mainland of B.C. or the southern part of Ontario for many products, that kind of disadvantages is ever more magnified when you start looking in places like California for vegetable products or you know other places where there is a year round growing season.

We talked briefly upstairs about the grain revolution. Who would have thought 15 years ago that today India would be a net exporter of grain and they are. We have a slowing of population growth world wide, a phenomenal increase in productive capability and capacity in third world countries. We hear a lot about Ethiopia and the famine there. But that's really becoming much more the exception to the rule than the rule itself. So competition on the producer's side means there is plenty of food to go around and that will only improve over time.

The final thing to talk about then on the producer side Canada vis a vis the rest of the world, and again I offer no comment from a political or an opinion perspective as to the appropriateness of marketing boards and other structural support programs that exist in Canada but from a processor perspective, you better believe it, they'd rather they weren't there. In many other places in the world those kinds of programs simply are not self evident and if you are talking about processing food, then some of these kinds of programs are not in the best interest of the processor. So we have a relative disadvantage there under the current conditions.

Internationally the good news is growing demand, more sophistication and hence, a move towards more secondary and tertiary produced products. The bad news is production world wide is going up, fast technology transfer and some cost disadvantages that we face here in Alberta.

What that boils down to is a sense that there is a challenge along with the opportunity.

To sum up finally what kind of opportunities are there? Predominantly it is for specialized products, smaller scale operations, primarily by local entrepreneurs that imply flexibility, a closeness to the customer, filling that special need and special product, again we are talking on the retail side about the 50 cents worth of pickles in the $5.00 oak cask. We are talking about products that, therefore, have high promotion content on the retail side, probably displayed in the specialty case as opposed to along with the Cheerios. On the foodservice side, an emphasis on high quality control, flexibility and meeting the needs of the foodservice sector which is growing very rapidly.

Finally, no matter what the sector, it is going to take imagination and innovation to again find those special products that are not only a good idea but commercially viable. Overall then, the way you find those is by firmly understanding the linkages between the producer, the processor, the distribution channel and the consumer.

Thank you.

International marketing outlook

Ted Bilyea

I have been asked to express a few thoughts on the international marketing outlook particularly as it applies to Processed foods.

Processed food products include meats from beef, pork and poultry, dairy, cereal preparations, fruits, vegetables, honey, confectionery, oils, fats, beverages and others.

As the product range is wide, I intend to deal with it generally while reserving a few specific remarks for beef and pork.

It is easy to be pessimistic when discussing a marketing outlook for agriculture, particularly during a year of extraordinarily adverse weather, poor commodity prices and considerable excess capacity in certain areas of the processed food business.

However, the track record in regard to agricultural exports over the last several years has been quite positive.

Don McClatchy, writing in the last spring's Agrologist, put the present situation in perspective noting that between the periods 1961 1963 and 1981-1983, Canadian agricultural exports increased approximately 120% in real terms. "At the same time, agricultural imports increased by only 74%. The result of this has been that our agricultural trade surplus has increased 234% in real terms since the early 1960's with rapid growth in the last five years."

"A growing percentage of our total output has been exported (roughly 40% in 1961-63 and 50% in 1981-83)." Our reliance on world markets is extraordinarily important, however, I fear that it is often not widely enough appreciated.

Moreover, it is vital to understand that, for the most part, hope for future expansion of Canadian agriculture rests on the export market as there simply is a limit to what Canada can absorb, and what import substitution can accomplish. So the first thought for today should be that we must closely examine the potential consequences of any Canadian actions that may give our trading partners an excuse to further restrict our trade.

Mr. Ted Bilyea is General Manager, Canada Packers Inc., International Trade Division.
D. McClatchy - Agrologist, Spring '85.

In this regard, the discussion of a National Trade Strategy which was initiated at the First Ministers Conference last February in Regina is critical to the future of agriculture in this country.

Three elements have been identified as fundamental to a National Trade Strategy:-

- Competitiveness
- Effective International Marketing
- Access to Foreign Markets.

All three are important. However, we as a nation can, if we so choose, do something about competitiveness. Effective marketing is mostly dependent on competitiveness and the access to foreign markets.

The issue of access to foreign markets, however, is not something we have much control over. It is something that is secured only by difficult bargaining.

If an example is needed as to what happens when market access is restricted, we need only note the alteration in destination of our exports over the past two decades.

In 1961-63, the U.K. took 24% of our agricultural exports and the original six EEC members 40%, for a combined total of 64%. Between 1981 and 1983, the same countries accepted 6% and 8% respectively for a combined total of 14%.

Restricted entry to the EEC killed this market.

There is no reason to assume that such dramatic changes might not occur again. Canadian agricultural exports survived this shock and, in fact grew, thanks to a growth in sales to the U.S., excellent improvement in sales to Japan and a major increase in sales to the U.S.S.R. and China. The latter two countries by 1981-1983 were taking 35% of all our agricultural exports. However, for the most part, this was wheat and other grain products.

Looking at this trend from the perspective of processed foods, it is somewhat alarming.

Not totally unrelated to the above change in destination of our agricultural products, has been a marked change in the proportion of value added versus primary product export.

Agricultural Exports

	1967-69	1980-82
Primary Products	64%	70%
Semi Processed	20%	21%
Highly Processed	16%	9%
	100%	100%

Two important formal opportunities to extend and/or retain access to foreign markets are on the horizon. The first is the possible resumption of the next round of GATT negotiations expected to begin in 1986 or 1987.

The issue of agricultural export subsidies will be front and centre. It is generally assumed that if subsidies could be brought under control, world market prices for key agricultural products would eventually rise.

The possible rise in red meat prices could well be substantial and, therefore, a direct benefit to this key sector of western agriculture.

The second opportunity for market extension will come during the "trade enhancement" negotiations with the U.S.

I feel it is already clear that among the processed food sector a consensus is arising that liberalization of trade with the U.S. is not possible in the sector until some fundamental obstacles to free trade are overcome.

The Grocery Products Manufacturers Association summed up the problem in its recent submission to the Minister of International Trade as follows:

"There exist within the Canadian socioeconomic fabric inherent structural impediments which currently constitute major nontariff barriers to trade enhancement. These impediments include supply management marketing boards and labour costs, especially in the benefit packages, that are significantly higher than in the U.S. The CEO's also recognize differences in economics of scale, geographic and climatic disadvantages and competitive pressures such as excess capacity in manufacturing facilities, particularly in the heavily populated U.S. border states.

Our industry's leaders feel it is important, in principle, to promote opportunities for broadening the scope of Canada's international trade, especially with the U.S. However, Canada will not be ready for freer trade with the U.S. until some fundamental reforms take place in this country".

As we cannot do a great deal about our geography, climate or the over capacity problem in certain U.S. manufacturing industries, the real change is going to have to take place on the other items, supply management and labour costs, and depending on progress on these two items, capital investment.

The Federal Government in their Sectorial Marketing Report on Agricultural and Food Products reiterates the same theme:

"The Food Processing Sector is well developed in Canada, with approximately 12 per cent of production being exported. However, Canada's international competitiveness is reduced by a number of domestic influences, i.e. marketing boards, labour costs, and the high value of the Canadian dollar".

It is necessary, therefore, to make some further progress on the competitiveness issue otherwise a great market opportunity will be missed.

One other important and imminent change which will affect market access is the dramatic liberalization of the Japanese market that is taking place. My associate from Japan, Mr. K. Ebihara, the President of Canada Packers Japan, will I am sure, be covering this change more fully in his remarks.

Therefore, I only wish to mention that major changes are underway in both tariff and nontariff barriers.

It will be up to Canadian agriculture to respond vigorously to these changes, as other agricultural producing nations surely will.

I would like to turn now to a few specific remarks about the meat processing industry.

The meat business in Canada is an industry which developed out of an export base and it continues that export orientation today. The position of the industry as expressed by the Canadian Meat Council is that if we wish to export, we must be prepared to import. However, we do not believe Canada should have to compete with the subsidized exports of other countries.

A number of countervail actions have been proposed to highlight the problems of subsidies.

It is important, however, that Canadians do not lose sight of the fact that we still enjoy a net export surplus in meats of 470 million dollars. It will be counter-productive to run around sticking our finger in the dike every time imported product arrives in this country. Long term we must use the upcoming GATT negotiations to make real progress on the issue of subsidies. To do this, the message must reach Ottawa that this is a priority item.

Evidence that concerns about imports should be clearly secondary to an emphasis on exports is the recently released 1985 Third Quarter Meat Export Statistics Report, which shows Canadian meat exports 11% ahead of the year earlier levels.

Meat Exports - 39 Weeks

	Destination	**1984**	**1985**	**Change**
		(million lb.)		
Red Meat	All Countries	430	476	+ 11%
	U.S.	363	420	+ 16%
	Japan	49	35	- 27%
	Other Countries	19	20	+ 10%
Fresh Pork	All Countries	292	319	+ 9%
	U.S.	241	279	+ 16%
	Japan	44	31	- 30%
Processed Pork	All Countries	6.1	8.9	+ 44%
	U.S.	3.1	5.5	+ 77%
	Japan	—	—	- 50%
Beef	All Countries	129	145	+ 13%
	U.S.	117	133	+ 14%
	Japan	4.5	4.7	+ 3%

A breakdown of the figures is available from the Canadian Meat Council.

In the case of liberalized trade with the U.S., the Canadian meat industry has for some time existed in an environment of virtual free trade with the U.S.A. Duties do not severely restrict trade in either direction.

There are a number of anomalies in the duties which on balance penalize Canada, but these issues just require additional bargaining with the U.S.

Longer term the more serious problem particularly for the beef business is the vast difference in scale of plant and throughput in the U.S.A.

Some of the larger U.S. box beef plants for instance run two shifts, six days a week.

In Canada with the limited supply of beef cattle available, most plants are running one shift 37 or less hours a week.

In fact, five or six of the larger Canadian plants working closer to capacity, could handle the volume now produced in the 30 some odd establishments now producing boxed beef.

Beef

Many of you are familiar with the serious decline in per capita consumption of beef in Canada. From the peak of 113.2 lbs. in 1976, beef consumption has dropped to 84.5 lbs. in 1984.

This 25% decline is paralleled in U.S.A. statistics.

There are many reasons for the decline, however, the whole area of health consideration and life style seems to be toward the top of the list.

It is somewhat of a paradox, therefore, that the negative health issues appear to be potentially the major marketing strength for Canadian beef in export markets.

Until recently, the leanness of Canadian beef was considered a shortcoming in key markets such as the U.S. and Japan. Given the concerns regarding fat and diet, the former short coming could become a real marketing plus.

Although there is concern about American hind quarter cuts moving into Canada, Western Canadian front quarter cuts are selling reasonably well in the U.S.A., despite a 2¢ per lb. duty.

The Japanese market is also becoming increasingly attractive for Canadian beef.

In the Japanese fiscal year ending March 30, 1985, the export quota for beef was fixed at 150,000 m.t. and is now scheduled to be increased annually by 9,000 m.t. until fiscal 1987 when the total will reach 177,000 m.t.

By 1995, it is forecast to rise to 300,000 m.t.

The quota for "high quality" beef has been fixed at 30,800 m.t. and is increasing at an annual rate of 6,900 m.t. until fiscal 1988 when the quota will reach 58,400 m.t.

As is in the case of the U.S. market, there appears to be a long term opportunity to turn a perceived short coming in our Product into a marketing advantage.

The present Japanese complaint is that Western Canadian cuts are not well marbled and are somewhat lightweight. In addition, Canada is not considered to be a consistent exporter.

I believe the Alberta Government Department of Agriculture has taken a very positive approach to the issue and is embarking on a long term plan to sell western beef to Japan by emphasizing the value for money and the health aspect of the product.

If this marketing approach begins to bear fruit, I think it will be necessary to review the grading requirements which currently disallow A1 cattle as "high quality beef". Otherwise, we will never be a consistent exporter to Japan.

Beef by-products have become very important export items. Hides, tallow, tongues, kidneys, livers, hearts, lips, hanging tenders, tails, etc. are traded worldwide. Demand for these products remains strong, however, the issue of EEC inspections clouds the future considerably.

It would pose a serious problem to the beef industry if the outlet for a large percentage of our fancy meats was cut off. As Canadian plants already meet very high standards and as the Canadian inspection system is very professional, we feel the grounds for rejecting Canadian plants, if any were to be rejected, would be suspect.

Pork

Many people here today will be aware of the substantial change in pork exports over the past few years.

*** Canadian Exports of Fresh or Frozen Pork**
(Thousand Tonnes)

	1970	Share %	1975	1980	1981	1982	1983	1984	Share %
Total	6.4		25.0	60.9	70.9	87.8	86.8	95.1	
U.S.	3.0	47.0	1.9	28.1	30.6	45.4	44.6	66.0	69.0
Japan	2.8	44.0	22.4	29.4	36.7	38.9	39.4	27.1	28.0
New Zealand	0.3	5.0	0.4	0.4	1.2	1.1	0.8	1.0	1.0

The U.S.A. and Japan have been the two major export markets for pork for several years.

In 1980, pork exports to the U.S.A. and Japan were 28.1 and 29.4 thousand metric tons respectively.

With the onset of the hoof and mouth problem in Denmark, Canadian exports to Japan rose to 39.4 thousand metric tons in 1983.

By 1984, Denmark had resumed shipments to Japan. Canadian exports fell to 27.1 thousand metric tons and have continued to fall throughout 1985 to date.

*** Who Supplies Japan?**
Imports of Pork, Fresh - Chilled or Frozen
(Thousand Tonnes)

	1970	1975	1980	1981	1982	1983	1984
Total	17.1	124.5	107.8	182.9	136.5	163.5	178.5
Denmark	—	23.6	29.1	72.1	18.9	17.7	75.0
Taiwan	—	7.6	16.6	19.7	19.7	32.3	46.9
Canada	2.9	25.7	30.0	42.6	43.6	41.8	29.6
U.S.	7.6	43.0	29.7	38.9	32.7	35.4	22.9

* *Canada Japan the Export/Import Picture 1984. - K. Hay, Canada Japan Trade Council.*

Canada's share of the Japanese market went from a high of 43.6% of all Japanese pork imports in 1982 to 29.6% in 1984.

This is not all bad news. Overall Canadian pork exports during the same period have actually risen, with shipments to the U.S.A. reaching 66 thousand tons in 1984.

However, the shift in direction of a considerable quantity of exports previously destined to Japan, to the U.S.A. has brought with it the continuing threat of countervail, which although quieted for the time being, will certainly raise its head again if pork exports to the U.S.A. were to increase further.

It is, therefore, important to examine why such a large shift occurred and what can be done to rebuild our share of the Japanese market.

It is perhaps obvious but nevertheless worth mentioning that pork exports are flowing to the U.S.A. instead of Japan because the U.S.A. offers a better return.

What is less obvious is the fact that the Japanese market has become a necessary outlet for overproduction in Denmark and Perhaps more importantly that Taiwan's share of the Japanese market has grown from 7.6% in 1975 to 46.9% in 1984.

In the case of Canadian pork, it is fairly clear that the industry is generally world competitive.

The fundamental problem the industry faces is again long term market access.

In the case of Japan, the standard import price when combined with some measure of export subsidies encourages more imports from Denmark than would otherwise be the case.

Japanese generally prefer loins and backs from Canada, and bellies from Denmark and Ireland. However, in order to bring the value of their purchases up to the standard import price, they are forced to also purchase backs or tenderloins from Denmark and Ireland.

Not only does this hurt Canadian exports, but it poses serious difficulties for Japanese importers who are having trouble moving large quantities of tenderloin.

The standard import price has also not effectively regulated Taiwan pork entering Japan.

The time is right for Canada to push for modification in the administration of the standard import price to allow for standard pricing of individual cuts which would increase Canada's competitiveness.

The Canadian government should also use every opportunity to encourage Japan to scrutinize closely the entry of Taiwan pork to be sure that its large and growing share has been fairly won.

The moderate drop in the American and Canadian dollar in relation to European currencies, will tend to divert some additional product to Japan and away from the U.S.A.

Given the basic competitiveness of the pork industry, a receding dollar and strong action by the Canadian government, both bilaterally with Japan and the U.S.A. and multilaterally at the next GATT round, Canadian pork should have a very good future.

State of the industry

Hon. LeRoy Fjordbotten
Minister of Agriculture

Ladies and gentlemen, this morning it's my very great pleasure to open this plenary session of "Second Century: Opportunities for Agriculture". The event, as you know, is the first of its kind in Alberta, and I must say it's an honour to take part in this ground-breaking effort.

More than that, though, it's a real pleasure to be here among so many people who share my concern for the agriculture industry. In the next few hours, you can be sure you'll meet people with whom you have at least one thing in common — we're all here because we're interested in the future of agriculture in Alberta.

We are here for a purpose, one that involves each of us. Together, we want to identify the goals that Alberta's agriculture industry should attempt to achieve over the next quarter century. Just as important — perhaps more so — we must also determine the ways we can achieve those goals.

Our challenge is to find the formula which will allow our industry to grow and progress from today through the year 2010, a plan which will appeal to each farmer, each processor, each person involved in agriculture, so that they will want to establish long term goals and make the most of new opportunities.

It's a challenge we must face, together.

Yesterday, at the opening technical sessions, and later at the evening reception, I heard an incredible range of opinions on our agriculture industry. On one side, there are those who are pessimistic — those who anticipate new problems around every corner. On the other side, there are the optimists — those looking forward to next year, because it's bound to be better than this year.

Frankly, after these last six months, I don't know which group I belong to. As Agriculture Minister, I'm an optimist, because part of my job is to view the industry as a whole — and overall, the long term trend for agriculture is very positive.

Yet, as an individual farmer who lost half my barley and all my canola in 1985 — I've got to admit this was a downright miserable year.

Even as a politician, when you face a year like 1985, it sometimes takes quite an effort to be optimistic. Consider, if you will, that this year the province has gone through its worst drought in 50 years; nonetheless, the moisture we received this fall will probably allow our 1985 precipitation to equal or even exceed the long term average.

Consider that in 1985 farmers are going through a very tough financial period, when the overall squeeze between costs and returns is about the tightest we've known. Some blame input costs for much of this problem — and yet this is happening at a time when the Alberta government actually loses money on every pound of fertilizer our farmers put in the ground and every gallon of purple fuel we burn. I know this only too well, in spite of the fact that people keep telling me the government should eliminate royalties on energy-based inputs. The fact is we've increased rebates so much that we're having to supplement programs with revenues from general taxation.

People also tell me the government should reduce interest rates. I agree: the federal government's interest rates are higher than they should be, according to long term trends. But did you know that the Alberta Government's prime vehicle for provision of agricultural credit, the Agricultural Development Corporation, doesn't make any money? In fact, it loses money each year, and must have its expenses covered by the Department of Agriculture.

I'm a farmer, so I understand how producers think as an industry. My first reaction to any conference that wants to look at the future is to say, "to heck with tomorrow ... I don't know if I'll even be in business tomorrow. What can be done to help me today?"

Believe me, I recognize the problems facing producers. And this year we have had more than our fair share.

They fall into four classes. First, there are general concerns, such as high input costs, low commodity prices, high interest rates, and reduced equity as a result of lower land values. These are the problems which seem to face all Canadian farmers year after year.

Then there are the perennial provincial concerns. These include land use, surface rights, research funding, water supplies, livestock predators, crop predators, weeds, and many others.

The third class are chronic concerns with federal government policies, which include livestock stabilization, crop stabilization, western grain transportation and a national feed grain policy, to name only four.

Finally, there are the problems specific to Alberta this year. The list includes grasshoppers and cutworms; feed shortages; high feed costs; low moisture during the summer; too much moisture during harvest.

The list is a long one. We're facing higher rates of equipment failure, because we can't afford to replace old machinery; increased difficulty in servicing farm machinery, because equipment dealers are going out of business because we can't afford to buy their new machinery; irrigation shutdowns, because there wasn't even enough moisture this summer to maintain some reservoirs; bankruptcies and quit claims because, as a result of all of these problems, net returns have been low.

Sometimes, as a consequence of our efforts to assist the industry, new concerns have arisen, such as: Zone C, under the Livestock Drought Assistance Program; the Marketing Council, because of its recommendations for improving hog selling and allocation; Fletchers; Gainers; Sugar

Beets, and — not least — LeRoy Fjordbotten, because he simply can't please all of the people all of the time.

All of these are problems or concerns within the industry today: your concerns and my concerns. Some are more critical than others. Some affect more people than others. All are important. I can assure you every last one has made its way to my desk. Where appropriate, and where it has been possible, the government has responded.

Since April 1st, when my Department's budget came into effect, I have announced initiatives worth more than $610 million above and beyond what we budgeted for the year. You would have to search long and hard to find a farmer in Alberta who will not benefit from at least one of these programs; in fact, the majority of farmers will benefit from four, five or even six different programs.

The fact is, primary agriculture in Alberta has had to come to terms this year with its second disastrous growing season in a row. In seeking solutions to the problems this has posed, I have received input from many different sources, and I would like to thank the numerous farmers and producer groups who provided the ideas and support needed to get so many programs in place.

At the government level, we've worked hard this year. From concept to implementation, each initiative we've announced has had to go through a series of rapid but demanding reviews. Taken together, the initiatives make up an agricultural package which is second to none in Canada, and of which I can honestly say I'm proud.

I would like to take a moment to note what we've done. Basically, we've handled things as they've come up. In the spring there were several concerns, such as fertilizer prices, the grasshopper infestation, the sugar beet industry and the damage done to our fresh vegetable sector by last year's early snows. In each case we acted quickly, and our responses were generally successful.

As spring turned into summer, a different set of problems arose. Drought became a reality, not just a possibility. The government responded in several ways.

One was to improve livestock water supplies, which we did with the dugout filling and the dugout construction and rehabilitation programs. Another was to improve supplies of livestock feed so we could maintain basic breeding herds. We came up with several answers in this area.

The Feed Grain Market Adjustment Program was one. By saving Alberta feeders up to $21 per tonne through this program, not only did we remove the market distortions created by the current method of paying the Crow Benefit, we also gave farmers a significant benefit to help them cope with the ill effects of this year's drought.

The program has produced another benefit. People coming back from Ontario tell me the Ontario Ministry of Agriculture and Food is concerned because there has been a significant drop in feeder cattle moving East. People in the Ontario Government say shipments out of Saskatchewan have been normal, as usual. But, they ask, why are there so few feeders coming out of Alberta? So far, we're just shrugging our shoulders and saying we're keeping them at home this year.

Still on livestock assistance, in September we announced the Federal-Provincial Livestock Drought Assistance Program, and the Alberta Feed Freight Assistance Program. Most of you know the details of these plans. Then, three weeks ago, I announced the Province would live up to the spirit of the commitment we made on August 15th, to see a livestock stabilization program in place for Alberta farmers.

At that time, I was pleased to announce the Interim Payments for the second and third quarters of the year, and to confirm that we will have a stabilization program in place, retroactive to October 1, 1985, regardless of whether it is provincial or federal. The Province made that commitment, and we are going to keep it.

For crop producers, we implemented a separate set of programs. It is worth noting that throughout Canada's history the federal government has assumed most of the responsibility for crop producer concerns. Livestock farmers have not received the same type of federal support, so the provinces have usually stepped in to provide assistance for this sector when necessary.

However, though the federal government has generally chosen to address the concerns of crop producers, this year the Alberta government has implemented its own major assistance programs for crop growers. The Grasshopper Control Program and the Fertilizer Price Protection Program were two; however, we concentrated our most important efforts in the area of crop insurance.

In July we announced farmers would obtain full coverage for low yielding crops and still be able to use those crops for any legitimate purpose, including livestock grazing or crop harvest. In July I also announced that crop insurance coverage would be restored to the level in effect on January 1, 1984, in all cases where this would benefit producers.

And all of these programs only supplement our ongoing efforts in the areas of credit, farm management counselling, soil erosion, research, technology transfer and farm fuel rebates.

Still more initiatives are under consideration by both the Alberta and the federal governments. Even without taking these into account, the Alberta government to date has made a major investment in the future of agriculture in this province, much of which is in the form of short term assistance.

This leads to the reason why conferences like this one are so important. Let's remember that the basic purpose of this conference is to view agriculture in a longer-term context. That's not to say we're ignoring the problems we have today; they have been identified, and where possible, dealt with. But, as I see it, our task during the next two days is to identify the trends, patterns and opportunities that will influence agriculture in the years ahead. Yes, we do face some tough problems in the here and now — but if we don't take the time to look to the future and together develop a concrete plan of action, I can guarantee you we'll face even bigger difficulties tomorrow.

Ladies and Gentlemen, for the next few minutes I would like to shift gears, and discuss agriculture in Alberta in the following context: let's consider today as the final day of our industry's first 100 years. But let's also remember that today is the first day of agriculture's next 100 years. I'd like to discuss some pretty basic questions, such as "Where are we today?" ... "How far have we come?" and "Where are we headed?"

Agriculture in Alberta has come a very long way in the past century. One hundred years ago, the industry was just beginning to take hold in our province. At that time the total cropland being farmed in Alberta amounted to fewer acres than are presently operated by a dozen of our larger grain producers. And remember, today we have more than 56,000 farmers operating in the province.

The cattle roaming the southern grasslands a century ago were few in number, and much, much inferior to today's genetically bred animals. Agricultural processing as we know it today was nonexistent, except for a little on-farm cheese and meat processing. Even producers have changed greatly in the past 100 years, particularly in terms of education. And that trend is continuing, with the average education level of Alberta farmers increasing by two grades every decade.

But what today's producer does have in common with farmers of the past is a strong belief in agriculture and a willingness to seek new ideas and to look to the future. These are the qualities which have allowed us to take such strides in the first 100 years of agriculture in Alberta, and which will allow us to make similar progress during the next hundred.

Needless to say, I would be taking a little more than my fair share of your time this morning if I tried to examine the entire 100-year history of our agriculture industry. Instead, I'll restrict my comments to making a few comparisons between today's industry and the state of our agriculture just 25 years ago. Not only will this demonstrate the tremendous development and expansion that has taken place on our farms and in our processing sector, it will also allow us to make realistic projections for agriculture as it might be in the future.

For instance, if we look at the statistics on five-year crop production averages for the period 1960 to 1964 and the period 1981 to 1985, we find that crop production in Alberta exploded by almost 85 per cent in the interval between the two. That record is even more impressive when you consider that the period 1981 to 1985 includes the significant production shortfalls caused by drought during the last two years.

Projecting the same growth rate into the future, Alberta's crop production could exceed 24 million metric tons by the year 2000, and 30 million tonnes by 2010. What will it take to maintain this pace?

One factor will be the expansion of our agricultural land base. Again, reviewing the past 25 years, we see a long-term increase in the number of acres committed to crop and livestock production.

In 1960, Alberta producers had just over 15 million acres in crops or allocated to tame hay or forage seed production. Another 1.7 million acres were pastureland and 7.4 million acres were summerfallow. That's a total of 24.1 million acres.

This year, in comparison, Alberta producers sowed over 18.7 million acres in crops and retained 3.9 million acres for tame hay and forage seed production. Pastureland amounted to 3.9 million acres and summerfallow area decreased to 4.4 million acres. The total is 30.9 million acres.

Looking ahead, a straight line projection indicates we'll have more than 25 million acres in crop production, tame hay and forage seed production by the year 2000, and about 28 million by the year 2010.

However, I believe those projection figures are probably too high. There are limits to the amount of land available for agriculture. Most of the province's best land is already in production, and there is increasing pressure from other sectors for available land.

Therefore, even as we attempt to increase the land base, we must pay more and more attention to the factors which govern land quality. This is one area where my Department has dramatically increased its capability during the past three years. A report recently prepared by Alberta Agriculture studied several potential strategies for increasing our land base, as well as for improving the land we already have.

The possibilities include expansion into the green area, expanding irrigation, deep plowing solonetzic soils, liming acid soils, reducing summerfallow, range improvement, rangeland conversion, woodland conversion, and reclaiming saline soils. There are certainly some very interesting options available to us in the area of land, soil, and water resources.

Another way we could help maintain our industry's high growth rate would be to increase our use of inputs. For instance, throughout the history of agriculture in Alberta, there has been a continuous increase in the use of fertilizers. Application rates that farmers would have thought excessive 25 years ago are now routine. In fact, in Alberta the use of fertilizer has increased 14-fold since the early '60s.

As recently as 1971, less than half the crop producers in Alberta said they used fertilizers regularly. Today there are few who do not use fertilizers. Projecting what will happen 15 years from now as a result of increased use of ever-improving fertilizers is difficult.

Perhaps it isn't even relevant, since we aren't yet even making use of the technology being made available to us today through programs like Farming for the Future. I remember speaking to the Alberta Canola Growers Association 18 months ago and saying that the technology was already available for canola growers to dramatically increase their production.

By increasing their fertilizer use at a cost of about $18 per acre, the long-term market price indicated they would receive $5 for every extra dollar they spent on fertilizer. Mind you, you must have proper moisture to do this. But the point is, the capability is already there. If we make proper use of what we already have, who knows where new technology could take us 25, 15, or even 10 years down the road.

A similar situation exists in the use of pesticides and herbicides. The development of species-specific chemicals has increased our production potential tremendously through the ability of these compounds to destroy the weeds which do the most damage.

And chemical fallowing is now being used in those areas where soil erosion restricts traditional summerfallowing. The future will undoubtedly bring new chemicals which will further assist us in solving various weed and pest problems.

Chemicals are also being developed which will stimulate plant growth or seed development. Still other chemicals will help to improve grain storage and feed conversion for livestock producers.

It's my impression that the development of farm technology in the past 25 years has surprised many of our city cousins. Who would have thought in the early '60s that four-wheel drive and front-assisted tractors would become as widely used as they are today?

Imagine what a producer of 25 years ago would have thought had you rolled into his yard with 56 feet of cultivator all folded up, and a four-wheel drive tractor. Imagine what a farmer of 100 years ago would think if he saw 12 guys producing as much as he and all the other farmers in Alberta did in a year.

I imagine we would feel much the same way if the technological advances developed between now and the year 2010 were suddenly to appear on today's farms.

Two of the most important technological developments for today's farmer are hydraulics and electricity. Just think what any farm operation would be like without either of those two essentials. Even on my own farm, it sometimes seems everything is hydraulic: steering, lifting, adjusting, even motors.

Used in conjunction with electricity, hydraulics can make complex operations routine. I don't need to point out how dependent we have become upon electricity — just ask someone who has had a power-outage recently.

Computer technology, too, will play a large role in the future of agriculture. While farmers have not made use of this new technology as fast as was predicted, producers 25 years from now may well wonder how the farmers of 1985 could have operated at all without computers. Just as hydraulics assist us now in steering, lifting, adjusting and running, computers will help us in remembering, calculating, communicating, deciding, and, ultimately, in managing our operations.

New crops and crop varieties will also continue to improve our production potential. Today's producers are able to select, from the many available varieties of cereals, oilseeds and legumes, the crops which best suit their particular operations. Think about the gains achieved in the past 25 years with new crops. Then think about the future.

Just as crop producers have seen great changes in the last 25 years, livestock operations have also undergone a major transition since 1960. Yesterday's pork producer would be amazed by the quality of the breeding stock now common on hog operations, and by today's modern hog facilities, with their controlled, disease free environments. That old-time producer would have a lot of questions to ask today's hog grower: about litter sizes, feed conversions, and the high quality of his market hogs.

Today's input costs and market prices probably wouldn't come as any surprise to him, however.

Similarly, the dairy, beef and poultry producers of the early '60s would be astounded by today's operations. Milking equipment, per cow production, rate of gain, growth regulators, weaning weights, modern poultry barns and per barn production have all been greatly improved in the past 25 years.

The total Alberta output of animal products would also come as quite a surprise to our time-travelling stockman. Since the early '60s, Alberta's total production of red meats has doubled, while white meat production has increased 71 per cent. Total milk output has decreased somewhat, but the annual production per cow has shown exceptional gains over this relatively short period.

The advances that will be made in our livestock industry over the next two decades will undoubtedly surprise many of us here today. This industry has great potential for progress.

Those involved in processing and manufacturing have also seen tremendous change over the years. Since the early 1970s the value of shipments from Alberta's food and beverage industries has increased more than five-fold, and it's continuing to increase annually. Products which didn't even exist a few years ago are now processed routinely throughout the province. And the number and types of products we have the potential to process are virtually unlimited.

Since I became Minister three years ago, Alberta Agriculture has substantially increased the resources it has committed to our processing sector. We have added staff in key areas, increased our assistance programs, and continued to support the building and expansion of processing facilities through the Canada-Alberta Nutritive Processing Agreement. In addition, with funds from the Alberta Heritage Savings Trust Fund we built a new, state-of-the-art Food Processing Development Centre in Leduc.

However, Alberta needs and can absorb additional processing facilities. Trade statistics show that a huge number of unprocessed products leave Alberta every day of the year.

There is tremendous potential in Alberta to expand our secondary sector. And I can assure you that the government's policy is that we must expand value-added processing in Alberta wherever possible.

Today, the amount of value added to Alberta products from processing by the food and beverage industries exceeds $800 million. This figure may seem impressive, but I see no reason why it can't be $1 billion, or even $2 billion.

Only two-fifths of the value of Alberta's out-of-province agricultural shipments comes from processed products. If all our exports left in a processed form, the value-added component would climb beyond

$2 billion annually. Add to this the potential for increased production by Alberta producers, and consider the benefits each of us could realize in this area. The opportunities are outstanding — by the year 2010, the value-added sector could become a major driving force in Alberta's economy.

A moment ago, I mentioned that two-fifths of the food products we export are processed. Obviously, three-fifths aren't. Did you know that all together the volume of raw and processed crop and animal products leaving this province each year is over 20 million tonnes? With a value of $4.3 billion (Canadian) in 1984, these exports made a major contribution to Alberta's economy.

But it shouldn't stop there. We're not even close to realizing our potential in this area. The prospects offered by a move towards freer trade between Canada and the United States, for example, make Alberta's future look very exciting.

The value of agricultural products from Alberta shipped to American markets increased from $60 million in the early '70s to more than $300 million last year. This is particularly significant considering the United States is already Alberta's largest foreign market for agriculture and food products, if we exclude cereals and grains.

We have taken an aggressive role in marketing our products in the U.S. Quite frankly, this task has been made easier because of our reputation as suppliers of top quality, world class products, a reputation we must strive to maintain and expand.

To most farmers, tomorrow is an unknown quantity. One of the things that makes the future difficult for producers to predict is the fact that the ability to market what we produce is becoming as important, if not more so, than our ability to produce it.

Day by day, farmers will have to pay more and more attention to the needs of the market. Just because a farmer wants to produce an item, or a processor to manufacture an item, doesn't mean there will be a market for that item. World markets are maturing, just as our agriculture industry has matured. Frankly, that means the market will dictate to us — we can't dictate to the market.

Though Alberta currently holds less than 10% of Canada's population, we account for almost a quarter of the nation's food production. Moreover, it is unlikely that Alberta's population growth will keep pace with the rate of growth of agricultural production over the next 25 years. Therefore, it is essential that we not only maintain our existing markets, but that we pursue new markets aggressively, and quickly.

In agriculture, we have always been firmly committed to research, development, education, extension — in short, to all those things that have gone into the development of a modern, efficient industry which produces high-quality products. However, as is often said, no matter how good a product is, it won't sell itself. The buyers of the international marketplace don't need to come to us, and they won't. We'll have to go to them, and we'll have to get there before anyone else does.

To assist in this process, my department is providing direct, flexible marketing support to Alberta's agribusiness sector. To date, the response has been enthusiastic, and we've seen some very satisfying results.

Alberta farmers and agribusinessmen are professionals. This fact is becoming increasingly recognized throughout the world, and it is starting to open a lot of doors for us — doors that could lead to a much more prosperous future.

A few weeks ago, I was very pleased to announce the signing of a memorandum between Alberta and the Russian Soviet Federated Socialist Republic, for a proposed Meat and Dairy Project. This project would see the sale of Alberta technology and services related to the production, processing and distribution of beef and dairy products to a nation and state much larger than our own.

There is no doubt this program could entail significant sales of technology, expertise and commodities. In fact, over the next decade, the value of the projects included in the proposed program could well total in the billions of dollars.

The importance of export trade to Alberta's agriculture industry — indeed, to the province's economy as a whole — cannot be overemphasized. If Alberta's producers were suddenly restricted to providing food for the population of our province alone, we would require only 2,500 of the larger operators currently farming, and only 6 million of the 30.9 million acres of farmland currently in use.

It doesn't take much imagination to envision the devastating impact this would have on our economy. As many of you are well aware — if only from hearing me say it so often — one out of every three Albertans depends upon agriculture for his or her paycheque. I don't need to emphasize further what that could mean to everyone in this room, if we were to lose a significant portion of our export markets.

Finally, in discussing how our industry has changed over the years, I must note that these changes have occurred just as much in the financial side of farming as in the practical side. In the years since 1960, input prices have soared, and, as many of us know only too well, product prices have not kept pace. The fact is that primary agriculture has gone from being a low-volume, high-margin business to the high-volume, low-margin industry it is today. And, I'm afraid, these conditions are expected to remain the same in the future.

These are simply the cold facts our industry must face. Any producer who believes that "farm financing" is a phrase which means simply keeping the banker happy is going to find the going tough in the years ahead.

The Alberta Government has done, is doing, and will continue to do its utmost to ensure that farmers have the financial resources they need to survive in their chosen profession. Our record proves that.

Ladies and Gentlemen, for the last 35 minutes or so I've been pleased to present you with my perspective on agriculture in Alberta. I've given you my views on the present state of the industry, both in terms of our present problems and solutions, and in terms of agriculture at the turning point between the past century and a new one.

Agriculture in Alberta is at the beginning of a great new era. Yes, we have our problems; yes, we have our concerns. But if you look at this industry in terms of the big picture, then you find we have made incredible progress just in the past 25 years, without even looking at the last 100.

I see no reason why we can't do just as well during our second century. We have the resources, we have the people, we have the skills — we have all the ingredients needed for success.

However, these building blocks alone can't ensure our success; initiative and resolve are also needed. But we have those too. I believe Alberta producers and processors have the will and the drive to seek out new markets, to take a chance on new technology, and to improve and to hone their own production skills until they they are the world leaders in agriculture.

And if we have those skills, then the opportunities almost take care of themselves. Almost. Then we have to go out and sell.

Last week I had the opportunity to give this same message to a number of fellow Albertans at a World Bank seminar on international development. Out of an international market worth billions of dollars per year, Alberta does roughly $50 million worth of business.

We can do better, much better. And I'm very pleased to report that we're working on it. People are aware of our problems — and they're coming up with proposals and solutions.

In a sense, that's what I expect out of this conference, except that the suggestions and proposals will reflect the entire industry, not just the marketing sector.

As we look to the future of agriculture, we must consider our problems and concerns and opportunities — together. We must dig deep to find the answers that will best suit everyone, in the weeks, months, and years ahead.

We must recognize the trends taking place all around us. We must recognize the conflict that exists between government interference in agricultural marketplaces all over the world, and the desire of the Alberta government and most Alberta farmers to reduce that interference to a minimum.

During the last few months, as the concept of this conference began to take shape, I imagined myself at this point in my speech, wondering what I would say. Should I issue a strong challenge? Or should I be quiet, understated, and simply explain the situation?

In fact, I'm going to try to do both.

Ladies and Gentlemen — I challenge you over the next day and a half to develop the ideas with which the industry can prosper; to show the same spirit of progress which has fuelled our advance during the past century, and to display the same understanding which has allowed us to survive the tough times, and to make the most of the good.

If you will do that, then this conference will be a success.

Thirty hours from now we'll know the answer. Thirty hours from now, at our closing luncheon, I'd like to get up in front of you and show the positive results that a conference like this can actually produce for our industry.

I don't expect to be able to get up and say you've decided this point or that point, but I do expect to be be able to say that the conference has indicated concerns in this area and has suggested answers in that one. The more definite you are, the more definite I can be, and that will be so much the better for all of us.

At the same time, over the next day and a half, I would like to see constructive output. By this I mean that I expect the government will come in for its fair share of criticism and challenges, and that the private sector will undergo fair evaluation too.

This conference shows the government is open to looking outside for answers. Some people expect government to come up with all the answers, but the future of this industry is a responsibility we all share.

I therefore extend to you all an invitation to give us your input. I welcome the ideas and suggestions of Alberta farmers. They are the backbone of agriculture's private sector, and the private sector is where all the good ideas start.

On that note, my best wishes to all for a good morning and a good conference.

New Alberta Agriculture Initiatives
Since April 1, 1985

Initiative	Estimated Cost 1985-86	Estimated Cost Total
1. Farm Fertilizer Price Protection Plan - announced April 1	$21,800,000	$45,965,000
2. Sugar Beet Industry Program - announced April 2	$6,600,000	$6,600,000
3. 1985 Fresh Vegetable Production Incentive Program - announced May 2	$1,200,000	$1,200,000
4. Grasshopper Control Assistance Program - announced June 4	$6,600,000	$6,600,000
5. Strategy for Increased Market Share Project - announced June 20	$668,000	$2,122,000
6. Feed Grain Market Adjustment Program - announced July 3	$51,500,000	$137,500,000
7. Alberta Pork Producers Debt Retirement Grant - announced July 3	$5,100,000	$5,100,000
8. Dugout Filling, Construction and Rehabilitation - announced July 19 and July 31	$1,500,000	$1,500,000
9. Crop Insurance Modifications to Retain Feed in Drought Areas - announced July 31	$10,000,000	$10,000,000
10 Canada/Alberta Sub-Agreement on Agricultural Processing and Marketing - announced August 12	$1,200,000	$51,200,000
11. Crop Insurance Coverage Restoration Program - announced August 14	$31,500,000	$81,500,000
12. Alberta Livestock Drought Assistance Program - announced September 12	$24,750,000	$36,900,000
13. Alberta Feed Freight Assistance Program 1985-86 - announced September 12	$2,600,000	$4,150,000
14. Crop Insurance Claims Funding - approved September 25	$114,000,000	$114,000,000
15. Interim Payments and Red Meat Stabilization - confirmed October 16, first announced July 3	$48,218,000	$109,453,000
16. Other programs	$1,440,000	$1,440,000
TOTAL: 21 New Initiatives	$328,096,000	$614,630,000

Farming for profit with financial resources

A United States perspective*

Neil E. Harl**

The financial crisis in U.S. agriculture is now well-documented.[1] Moreover, within the past year the general public has gained a much better understanding of the nature and severity of the financial problems affecting farm and ranch firms in the United States.[2]

This paper focuses upon:
(1) the features of the farm financial problem essential to an evaluation of whether public intervention would be appropriate under the circumstances and whether public intervention would be helpful, (2) a discussion of the manner in which intervention efforts are developed and evaluated, and (3) a review of possible programs of intervention.

I. Nature and severity of the farm and ranch financial problem

Never in the history of U.S. agriculture have problems of debtor distress occurred where there was greater heterogeneity in financial condition among farmers and ranchers.[3]

Extent of financial stress

As of January, 1985 approximately 22 percent of the farmers nationally had debt-to-asset ratios[4] of greater than 40 percent and were responsible for nearly 62 percent of the farm debt.[5] In general, it has been thought that farmers with debt-to-asset ratios above 40 percent are unable to service their debt and pay other costs when due in a setting of real interest rates[6] prevalent in the mid-1980's and the rates of return for agricultural assets common in the mid-1980's.[7] With $214.8 billion of farm debt outstanding at the end of 1984,[8] the amount of farm debt held by those with debt-to-asset ratios above 40 percent thus exceeded $140 billion.

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Table 1. Percentage of Farms and Debt to Asset Ratio for Each Region and for the United States, January, 1985.

	41-70		71-100		Over 100	
	Farms	Debt	Farms	Debt	Farms	Debt
Northeast	8.7	28.4	5.3	23.5	3.0	N/A
Lake States	15.8	33.5	9.8	29.8	3.3	N/A
Corn Belt	14.6	35.5	10.1	31.3	3.9	N/A
Northern Plains	16.3	37.0	10.5	25.8	4.0	N/A
Appalachian	7.2	34.4	2.3	14.7	1.0	N/A
Southeast	7.4	25.2	5.8	37.3	3.1	N/A
Delta States	10.9	38.0	6.9	27.8	4.1	N/A
Southern Plains	5.9	24.5	5.5	33.4	2.1	N/A
Mountain States	15.5	32.9	6.6	22.6	2.5	N/A
Pacific States	10.8	28.9	6.0	36.9	3.2	N/A
United States	11.6	32.9	7.3	29.0	3.0	N/A

*Source: **Financial Characteristics of U.S. Farms, January 1985**, Agric. Info. Bull. No. 495, Econ. Res. Service, U.S. Dep't of Agriculture, July, 1985.*

Moreover, the problem in some regions is substantially more serious than the national data indicate. A January 1985 survey in North Dakota indicated that 36 percent of the farmers had debt-to-asset ratios over 40 percent, held 37 percent of the assets and accounted for 74 percent of the debt.[9] Table 2 shows the Iowa data as of January, 1984.[10]

Table 2. Financial Condition of Sample Iowa Farmers by 1984 Debt-to-Asset Ratio, January, 1984.

	Debt-to-Asset Ratio					
	0-10	11-40	41-70	71-100	Over 100	All Farms
Operators (percent)	38	37	19	4	1	
Assets (percent)	31	42	24	3	1	
Debt (percent)	4	39	47	8	2	
Average age	59	53	47	45	47	54
Average assets per farm	$503,000	$694,000	$745,000	$470,000	$217,000	$615,000
Average debt per farm	$11,000	$160,000	$383,000	$375,000	$262,000	$156,000
Average equity per farm	$492,000	$534,000	$362,000	$95,000	-$45,000	$459,000
Acres owned (average)	233	298	271	172	131	261
Acres rented (average)	121	189	306	382	198	193

Source: 1985 Iowa Farm Finance Survey, Iowa Dep't of Agriculture, Iowa State University and Iowa Crop and Livestock Reporting Service.

Over one-third of the farmers in Iowa, averaging 59 years of age, had little or no debt as of January, 1984, with debt-to-asset ratios of 10 percent or less.[11] Approximately another third (37 percent) had debt-to-asset ratios of 11 to 40 percent.[12] In general, it has been thought that the 11-40 percent group would be able to stabilize their financial condition although the upper quarter of that group were encountering financial stress. Members of the remaining group, 24 percent of the operators, were severely impacted and were moving toward insolvency or were already insolvent.[13] The more recent balance sheet data for Iowa (as of January, 1985) are shown in Tables 3 and 4.[14]

Table 3. Distribution of Operators, Assets, and Debts of Sample Farmers, by 1985 Debt-to-Asset Ratio, January, 1985.

	Debt-to-Asset Ratio					
	0-10	11-40	41-70	71-100	Over 100	All Farms
Operators (percent)	35	32	21	7	4	
Assets (percent)	29	34	28	7	2	
Debt (percent)	2	25	48	17	8	

Source: 1985 Iowa Farm Finance Survey, Iowa Dep't of Agriculture, Iowa State University and Iowa Crop and Livestock Reporting Service.

Table 4. Financial Condition of Sample Iowa Farmers by 1984 Debt-to-Asset Ratio, January, 1985.

	Debt-to-Asset Ratio					
	0-10	11-40	41-70	71-100	Over 100	All Farms
Average assets per farm	$411,000	$578,000	$625,000	$347,000	$171,000	$506,000
Average debt per farm	$18,000	$170,000	$388,000	$336,000	$244,000	$161,000
Average equity per farm	$393,000	$408,000	$237,000	$11,000	-$73,000	$345,000
Average loss of equity in 1984	-20.1%	-23.6%	-34.5%	88.4%		

Source: 1985 Iowa Farm Finance Survey, Iowa Dep't of Agriculture, Iowa State University and Iowa Crop and Livestock Reporting Service.

The data indicate that a movement has occurred of borrowers in the 41-70 percent category into the over 70 percent group. Moreover, a significant number from the 11-40 percent category have moved into the 41-70 percent group. On the average, farmers who were in the 71-100 debt-to-asset ratio category as of January 1, 1984, lost $84,000 (88.4

percent) of their equity during 1984.[15] Thus, the rate of deterioration in financial condition has been great. Even those in the 0-10 percent debt-to-asset category on January 1, 1984, lost 20.1 percent of their equity in 1984, principally because of declines in asset values.

The U.S. Department of Agriculture estimates that 20 percent of all farms with annual sales of over $40,000 had both negative cash flow[16] and a debt-to-asset ratio of more than 40 percent.[17] Just over 50 percent of all U.S. farms were experiencing a negative or zero cash flow as of January, 1985.[18] A total of 852,242 farms reported a negative or zero cash flow with the largest number (638,479) having debt-to-asset ratios of 40 percent or less.[19]

The financial condition of farm and ranch firms may also be evaluated on the basis of return to equity.[20] As can be seen from Table 5, 32.6 percent of the operators have an estimated return to equity of less than -.05 percent. Those operators hold about 23.1 percent of the assets but are responsible for almost 42 percent of the debt. At the same time, more than 39 percent of the U.S. farm operators had a return to equity of greater than five percent. That group held about 36 percent of the assets and 36 percent of the farm debt.

Table 5. Distribution of Farm Operators, Debt, and Assets by Return to Equity for the United States, January 1, 1985(a)

Region	Insolvent Farms	Less Than -.20	-.20 to -.10	-.10 to -.05	-.05 to .05	.05 to .10	.10 to .20	Greater than .20	All Farms
Percent operators[b]	2.99	12.10	8.87	8.65	28.27	11.43	12.21	15.48	100.00
Percent debt[c]	13.27	14.37	7.25	7.05	22.15	10.52	10.66	14.72	100.00
Percent assets[d]	1.99	6.82	6.34	7.93	40.79	14.21	11.97	9.95	100.00

Source: 1984 Farm Costs and Returns Survey, U.S. Department of Agriculture.

[a] Return to equity is net cash income from the farming operation plus nonfarm income minus estimated living allowance divided by operator farm equity. [b] percent of U.S. farms. [c] Percent of U.S. operator debt. [d] Percent of U.S. operator assets.

The data make it abundantly clear that enough assets and debt are held by farmers who are unstable economically to assure that further weakness in land and machinery (below 1985 levels) is a virtual certainty unless - (1) farm incomes rise substantially, (2) real interest rates decline significantly or (3) major public-sector intervention efforts are implemented to stabilize the agricultural sector. Lenders holding land as collateral, principally the Federal Land Bank and sellers under land contract report sharply higher default rates in 1985. The willingness of short and intermediate term lenders to provide credit needed to keep land payments current appears to be diminishing rapidly. Further increases in delinquency rates on land loans is anticipated.

Unless something dramatic is done, or circumstances change, more than one-third of the farmers nationally will move to insolvency, taking down their lenders, their suppliers and other merchants, and inflicting incalculable damage upon the fabric of rural communities. Discharged indebtedness goes ricocheting through local communities, laying waste, with the unsecured creditors taking the greatest hit. However, with the weakness in land and machinery markets, even secured creditors are, in reality, only partially secured as collateral values have slipped below loan balances.

Effects of price and income policies

It's in this general setting of high real interest rates, a strong dollar (against other currencies) and an enormous debt load for the agricultural sector that discussion and debate on the 1985 farm bill is taking place. With agriculture fully integrated into the national and international economies, the sector does not enjoy the luxury of specifying the economic environment in any era. Yet agriculture is caught in 1985 in circumstances that provide little opportunity for manoeuvring under alternative policies.

Quite clearly, U.S. agriculture in 1985 faces clear-cut choices as to its future trajectory. With the cooperation of farmers, consumers and taxpayers, agriculture could move toward a program of supply management, reduced output and higher prices. That trajectory would involve downsizing agriculture by 30 to 40 percent over time and would bring modestly higher food prices. In the alternative, agriculture could move toward a more competitive position in terms of international trade in output, lower prices, full use of resources and lower food costs for consumers.

The latter policy alternative has a certain appeal especially to those who favor a market-oriented farm policy. Yet the strength of the dollar and the amount and distribution of farm debt assure that any movement toward internationally competitive commodity prices must be measured and related to progress in bringing down the value of the dollar and in stabilizing the farm debt situation. Agriculture simply has been sufficiently weakened to make rapid adjustments impossible without massive economic damage to the sector. With a strong dollar and relatively weak demand abroad for agricultural commodities, a reduction in commodity support prices is translated into reduced farm income rather than more export sales.

If price and income support policies were to be sufficiently favorable to farmers to solve the economic problems of the farmers with the greatest debt, serious problems of pricing U.S. commodities out of world markets and problems of production control would likely emerge. Therefore, it is unlikely that the debt problem can be solved completely by adjusting price support levels on farm commodities.

Yet the decisions made by the Congress relative to price and income supports in the 1985 farm bill promise to impact very substantially the resolution of the debt problem. A reduction of farm income would increase the number of farmers in financial difficulty and speed up the rate at which they would reach insolvency.

Relationship of commodity prices to land values

Lower farm commodity prices would be expected to lead to a reduction of the price at which land is economically supportable. That would be the case at least if potential investors had a permanent expectation of lower commodity prices.

Iowa State University projections under an assumption of a 140 bushel corn yield produce the figures shown in Table 6.

Table 6. Estimated land values based on income capitalization for high grade land assuming continuous corn.

Corn	Net	Capitalization Rate			
price	income	0.06	0.08	0.10	0.12
2.25	54.05	900.83	675.63	540.50	450.42
2.50	89.05	1484.17	1113.13	890.50	742.08
2.75	124.05	2067.50	1550.63	1240.50	1033.75
3.00	159.05	2650.83	1988.13	1590.50	1325.42

Thus, with an expected corn price of $3.00, and a capitalization rate of eight percent, land would be economically supportable at $1988 per acre. If the expected price for corn were to decline to $2.25, based on income capitalization and under the same assumptions, the economically supportable price would be about $675 per acre. It is indeed clear that land prices are linked to expected levels of commodity prices.

Possible scenarios

Undoubtedly the most crucial question in framing solutions to problems of farm debtor distress is what can be expected over the next two to five years with respect to - (1) interest rates, (2) farm income and (3) strength of the general economy both domestically and world wide. Substantial uncertainty surrounds each of those variables. For purposes of discussion, four scenarios are identified.

1. Continued high real interest rates, possibly rising over the near term, with stable or slightly lower farm commodity prices. At some point, high interest rates will choke off economic activity in the general economy with a recession resulting. A decline in private sector borrowing should weaken interest rates.

2. The value of the U.S. dollar relative to other currencies, presently high by historical standards although down from late February, 1985, could decline sharply because of the effects of the record-setting trade deficit (expected to total $130 to $150 billion for the 1984-85 fiscal year and could climb to $160 billion in the 1985-86 fiscal year) and a decline in interest rates domestically. The result presumably would be increased exports with a positive effect on farm income.

3. The Federal Reserve, concerned about economic pressure on Third World debtor nations (over $900 billion owed, much of the total to U.S. financial institutions) and pressure on some sectors of the U.S. economy might relax credit controls with an increase in the money supply and resulting higher rates of inflation. After some lag, farmland values would likely be affected. However, it is unclear in a world of deregulated financial markets what the impact would be on real interest rates.

4. If high and rising interest rates cause Third World nations to default on their debt obligations, an international liquidity crisis of major proportions could occur. The effects would be highly destabilizing within and without the United States. Obviously, every effort will be made to avoid such a financial catastrophe. The probability of such a default would seem to be quite low.

Global implications

Efforts to make U.S. agriculture more competitive on international commodity markets should be evaluated also in terms of likely impacts on other countries producing agricultural products, particularly Third World countries and on importing nations and consumers. An aggressive program to move larger quantities of U.S. agricultural products into international trade channels could be profoundly destabilizing for some Third World exporters of agricultural commodities. Such a move could, for example, exacerbate the problems of Third World Countries in meeting commitments to service their large and growing debt burden. Quite clearly, the analysis of the effects of changes in U.S. farm policy should be global in scope and comprehensive in nature with emphasis on general equilibrium outcomes as well as on the U.S. economy. The $140 to $150 billion trade deficit is a hidden form of foreign aid. Unfortunately, only about 15 percent of the U.S. trade deficit was with Third World debtor nations in 1984. In 1980 the U.S ran a small surplus ($293 million) with the same debtor nations.[21]

II. Development and evaluation of intervention efforts

There is an apparent necessity for large scale federal intervention in agriculture if economic disaster of major proportions is to be averted.

The financial situation in agriculture is of sufficient scale and severity to suggest that consideration of public intervention is justified. In general, if the benefits from intervention (on a present value basis) exceed the costs of intervening, it is appropriate to consider intervention.

Principles of intervention

Any intervention should be governed by agreed-upon principles. The following have been suggested for the United States —

- Intervention should be as broad as the problem giving rise to the intervention effort. Thus, intervention should not be just for the Farm Credit System (comprised of 37 banks organized into 12 Farm Credit Districts with a total loan portfolio of about $74 billion) which is currently the driving force behind public intervention in the United States presently. If intervention were to be undertaken at the level of lenders, the program of intervention should reasonably extend to all lenders. Otherwise competitive equilibrium is likely to be disturbed, perhaps irrevocably.

- Intervention should be directed at stabilizing farmers as borrowers. If farmers are not stable, lenders are unlikely to be or become stable. It would be an extremely costly venture to attempt to stabilize lenders if farmers are not substantially stable.

Intervening on behalf of lenders could be justified on the grounds of expediency in avoiding collapse of the lending system by keeping lenders in a viable state. The result, after an initial period of adjustment, could be reduced cost of credit to all borrowers, not just those in financial difficulty. This poses the question of whether intervention should be targeted.

- To limit the cost of intervention and to avoid perceptions of unfair treatment of farmers over nonfarmers (many of whom are also in financial trouble), targeting of benefits from intervention is necessary. Widespread public acceptance of realistic, hard-headed, equitable intervention efforts can reasonably be expected. But little public acceptance is likely if benefits flow heavily (even though not exclusively) to farmers not in financial difficulty. It is acknowledged that targeting of benefits from intervention pose fairness problems of a different sort as farmers who are not under serious financial stress may resent benefits flowing to those in financial difficulty.

- Programs of intervention should be flexible in nature such that if economic circumstances change, the program could be altered or terminated. This argues against heavy up-front expenditures and in favor of annual maintenance expenditures of a program of intervention.

- Public intervention should not interfere unreasonably with adjustment and economic efficiency and should be governed by realistic long-term expectations as to demand-supply, price and profitability relationships. A major benefit of intervention is avoidance of "overshooting" of equilibrium conditions. The probabilities of serious overshooting in land price, for example, seem high under present conditions.

- It is not unreasonable to request assistance from the general public, but the public's investment in intervention should be protected if economic circumstances were to change and agriculture were to return soon to profitability or land values were to increase substantially for other reasons.

- Agriculture is not the only sector of the economy experiencing serious economic difficulty. Any sector or subsector that is both captial intensive and export sensitive is suffering from the effects of high interest rates, a strong dollar and weak demand in countries pressed to keep their debt obligations serviced. Most of the sectors or subsectors experiencing stress, other than agriculture, can more easily respond to financial pressure by reducing output to obtain relief as to price. Because no single producer in agriculture is sufficiently large as to influence price, reduction of output is less likely without intervention. In general, society benefits from this feature of agriculture in the form of greater output and lower product prices than would be the case otherwise. However, occasionally agriculture needs help in adjusting if serious economic damage is to be avoided from overproduction.

Evaluating programs of intervention

An almost infinite array of public sector interventions is possible for most policy problems. This is certanly the case with the current financial crisis in agriculture. Although evaluations are difficult to make inasmuch as proposals are understandably diverse in basic features and characteristics, it is essential to an objective review and appraisal that proposals be evaluated on the basis of an agreed-upon set of criteria. For the farm financial crisis, it is suggested that the set of criteria include, for both intervention and non-intervention -(1) the direct and indirect costs to taxpayers and consumers: (2) who receives the benefits from intervention: (3) whether the proposal is likely to stabilize the farming sector and whether reasonable stability is likely to be extended to lenders and suppliers: (4) who bears the risks of further declines in asset values: (5) who bears the risks of future changes in interest rates and other costs of production., (6) who receives the benefits of future increases in asset values; (7) whether the proposal encourages necessary resource adjustment and promotes economic efficiency; and (8) the administrative costs expected to be associated with the implementation and operation of the specific proposal.

In the case of the farm financial crisis intervention is viewed as a means to facilitate the adjustment process, minimize the costs of adjustment and avoid the consequences of over adjustment or the overshooting of what should be equilibrium conditions. If present economic conditions continue, resource adjustment at the firm level will be needed under any reasonable scenario of intervention. In the event that the economic environment were to return to more favorable economic conditions for agriculture, the amount of adjustment needed would be proportionately less.

The eight criteria identified above are discussed in the paragraphs following.

Direct and indirect costs. The net costs of intervention (compared to the costs and consequences of no intervention) are heavily dependent upon assumptions as to changes in interest rates (particularly for variable interest rate obligations), changes in other production costs, farm commodity prices and rates of participation in the intervention program. The **design** of the intervention program may also influence the costs incurred. Thus, a program providing for the purchase of land and other assets with creditors paid off would incur heavy up-front costs compared to a plan providing for an entity to take over land with indebtedness left in place. In the latter case, only annual costs to service the debt obligations would be incurred in addition, of course, to administrative costs.

The way costs are incurred - a heavy up-front charge or maintenance costs on a year to year basis - should also be considered in light of the total costs incurred if economic conditions (1) deteriorate or (2) improve for U.S. agriculture.

Who receives benefits. Public intervention could involve financial assistance rendered to farmers, financial assistance provided directly to lenders or economic assistance through the federal price and income support program.

In general, it would be virtually impossible to stabilize lenders if a substantial portion of the borrowers were economically unstable and moving toward insolvency. Therefore, it would seem that intervention efforts should be directed at assuring that substantial stability is assured for farmers and ranchers even though program benefits may be transmitted through the lender as a conduit.

Providing economic assistance solely through price and income support programs would be expected to create problems of a potentially serious nature. Although solving the problems of debtor distress in agriculture is not unrelated to commodity prices, addressing the problem solely through price and income supports would be expected to - (1) provide substantial benefits to farmers and ranchers who are not in serious financial difficulty, pose problems of "targeting" of benefits, (2) encourage overproduction as higher commodity prices induce a positive supply response and (3) work to price U.S. farm commodities out of international markets.

Stabilizing the farm sector. With no immediate prospect for relief from the forces that have combined to create an economic climate adverse to profitable agricultural production in the United States, intervention if undertaken should be viewed on a three to five year basis.

While conditions could change for the better in less than three years, for planning purposes a three to five year planning horizon should be assumed. It is entirely possible that intervention beyond five years would be needed.

The important point for purposes of evaluating proposals for intervention is that each proposal be evaluated on the basis of what would be required to bring relative stability to a substantial percentage of the farm and ranch firms.

Risks of further declines in asset values. While data would indicate that land values in some areas are economically supportable at average commodity prices over the past two to three years, commodity prices are subject to fluctuation with further declines possible related to - 1) changes in government price and income support policy, 2) conditions of domestic demand or supply or both, 3) changes in world demand or supply or both and 4) changes in terms of trade internationally.

A major policy question relates to who should bear the risk of declines in asset values during the period of intervention. For example, if a newly created entity were to purchase or otherwise acquire land, risks of changes in asset values would rest with the entity. On the other hand, if a newly created entity were to provide supplemental financing with borrower-lender relationships basically undisturbed and with ownership remaining with the borrower, the risk of changes in asset values would remain with the borrower (and lender). It is believed that the degree of societal assumption of risk is an important policy issue.

Changes in interest rates and other costs of production. As noted above, interest rates for short, intermediate and long-term credit are highly important variables influencing the economic and financial condition of farm and ranch firms. Sharp declines in real interest rates (nominal rate less the rate of inflation) could eliminate the need for public intervention. On the other hand, increases in real interest rates for farm and ranch lending would exacerbate the economic problems of heavily indebted farm and ranch firms with the result that - (1) the costs of intervention would be increased or (2) the effectiveness of intervention would be reduced. If a program places the risk of changes in interest rates on the borrowers, the limited capacity of heavily indebted farmers and ranchers to bear the risk could also reduce the effectiveness of the program.

Benefits of increases in asset values. In times of falling asset values, it is common for beliefs as to future asset values to be based upon an extrapolation of near-past trends. That is not unlike the way beliefs as to asset value trends are shaped in periods of rising asset vaues. Neither model provides a very accurate projection of asset values. Obviously, asset values cannot continue to decline forever. At some point, economic relationships should stabilize and produce reasonably stable values. Some increase in asset values might even occur.

A major policy question necessarily associated with public intervention is whether and to what extent the public should participate in any future increases in land (and other asset) values to the extent, at least, of amounts of public funds advanced. A further question relates to whether a charge should be made for the use of the public funds. Of course, if a newly established entity acquires title to assets, any future increases in asset value would presumably inure to the benefit of the entity.

Encourages resource adjustment. The current array of farm and ranch debtors makes it very clear that economic adjustments will be necessary in many firms even with the degree of public intervention that could realistically be expected. Proposals for intervention should be evaluated in part on the basis of whether a particular proposal would - (1) inhibit or (2) encourage, adjustment in scale of production, asset ownership or changes in enterprise and farm management.

Without any intervention adjustments will occur. Realistically, even with intervention resource adjustment is likely to be necessary.

Administrative costs. Proposals for public intervention would be expected to vary dramatically in terms of administrative costs involved that are borne by the intervention program. Proposals for intervention may specify that some administrative costs are to be borne by the private sector. For example, the costs of developing reorganization plans for individual farm firms and obtaining the approval of creditors may be borne by the farmer and the creditors.

For proposals that would leave asset ownership in the hands of borrowers and that would leave the lenders in position with respect to the loan for purposes of servicing the loan, the administrative costs would be expected to be relatively modest. In that event, the principal costs would be those associated with general administration and oversight of the program and evaluation of applications for participation in the program. By contrast, for programs involving acquisition of asset ownership and payment of all outstanding indebtedness encumbering the assets, the administration costs would extend also to property management, development and supervision of rental arrangements and possible participation in the expenses and risks of production.

A distinction should be drawn between administration costs for a program of intervention and the overall costs for the program. The latter include the total costs of intervention producing benefits under the program. The former pertain only to the costs directly associated with implementation and operation of the program as an administrative matter.

An important component of administration of intervention programs, and thus administrative feasibility as well as cost is the approach taken to establish and administer conditions of eligibility. In general, it is believed that eligibility criteria based upon the operation of economic forces are likely to be more effective than regulations alone.

III. Possible programs of intervention

No public intervention

A policy of no intervention could be followed with the burden of adjustment left to borrowers, lenders and others to pursue available remedies. Lenders would be expected to foreclose on real estate mortgages, proceed with remedies under the Uniform Commercial Code in the event of default on obligations with personal property as collateral, forfeit the rights of defaulting buyers under installment land contracts and work out repayment arrangements under informal compositions with borrowers. Among the latter are voluntary, privately-arranged restructuring efforts as principal balances are written down or interest rates are reduced or both. Heavily indebted farmers at or approaching insolvency would be expected to file for bankruptcy under U.S. Bankruptcy Code chapter 7 (liquidation) or Chapters 11 or 13 (reorganization) options, voluntarily turn over assets to creditors in satisfaction of debt obligations or sell assets and apply the proceeds of sale on amounts owed.

In some areas of the United States, a policy of non-intervention would likely not create unacceptable levels of economic trauma. However, available data indicate that in some areas substantial economic costs would be incurred in terms of loss of wealth, failure of financial institutions, insolvency by suppliers and shrinkage of the economic and social base of rural communities.

Evaluation

Direct and indirect costs. The major question with a policy of no public intervention is the extent and distribution of costs attributable to the process. If land and machinery markets were reasonably buoyant, the asset transfer, discharge of indebtedness and resource adjustment processes could be carried out reasonably well. The most significant problem is the extent and distribution of economic costs where factor markets are weak. In many agricultural areas, declines in land and machinery values since 1981 pose serious questions of whether a policy of no intervention could be carried out without massive economic damage to farmers, lenders, suppliers and the entire rural community. Available data indicate that the amount and distribution of debt held by farmers and ranchers are such that three to five times as many assets would be forced into markets (or held in a state that would overhang the market such as land held in inventory by lenders) as those markets handle in normal times.

Thus, the costs of a policy of no public intervention would be costs associated with assets exchanging at prices well below long-run equilibrium values with the result that a great deal of indebtedness would remain unpaid and be subject to discharge. With nearly two-thirds of the farm debt nationally held by farmers and ranchers who are unable to generate sufficient cash flow to meet obligations and are moving toward insolvency, even a 70 percent recovery on collateral value (which is high for some areas today) would mean that more than $40 billion of debt would be discharged, causing damage to lenders and other creditors. It should be noted that a substantial amount of farm debt is unsecured with that debt heavily concentrated among input suppliers.

Who receives benefits. The benefits of a policy of no public intervention would be concentrated among those - (1) financially able and willing to acquire farm assets at depressed prices which would likely result in greater off-farm ownership of farmland, (2) beginning operators unencumbered with debt who could acquire farm assets at a relatively low cost, and (3) taxpayers and others outside agricultural areas who would continue to enjoy low cost food and who would not bear the adjustment consequences occurring in agriculture and in rural areas.

Stability for farmers and others. Without much doubt, a policy of no public intervention would be highly destabilizing to heavily indebted farm firms with that instability transmitted directly to lenders, suppliers and others in rural communities.

Risks of further declines in asset values. The burden of further declines in asset values would be borne by those holding the assets. That would include lenders holding farm assets in inventory as well as farmers, retired farmers and investors.

Further changes in interest rates and costs of production. Vulnerability to increases in interest rates and costs of production would be concentrated among farmers and others holding what would amount to an equity position with respect to farm assets. It should be noted that lenders, generally viewed as providing debt capital, in reality have an equity position as the equity base of a borrower diminishes in the face of economic adversity.

Benefits of increases in asset values. The benefits of eventual increases in asset values would be received by those holding the assets when the economic environment becomes more favorable for agricultural production. To a great extent, that would be those able to acquire assets at depressed prices which would include farmers who have a strong equity position, off-farm investors and beginning farmers with little or no debt. It is important to note that the sharp declines in farm asset values in the United States since 1981 have reduced the ability of many farmers to acquire assets. It is also important to note that the state of the non-farm economy has remained generally buoyant with the result that agriculture is unusually vulnerable to outside investment.

Resource adjustment. A policy of no public intervention would set in motion forces that would lead to resource adjustment. The resulting resource ownership and use patterns may not, however, be totally rational because of the overloading of factor markets and the overshooting of adjustment targets. Thus, rural communities might well suffer substantially more economic devastation than would result from a more measured pace of adjustment.

Administrative costs. The costs of administering a policy of no public intervention would, almost by definition, be zero. However, administrative costs of programs needed to deal with the resulting adjustment of farm and ranch resources could be significant.

Debt restructuring with loan guarantees

The debt restructuring program announced by President Reagan on September 18, 1984, was an effort in meeting the debt problems of commercial agriculture in the United States. If a farmer could show cash flow equal to 110 percent of costs and debt service on a projected basis, and the lender were to write down at least 10 percent of the principal value of the loan, a guarantee of up to 90 percent of the remaining principal balance could be guaranteed by the Farmers Home Administration. The program was referred to as the Debt Adjustment Program or DAP and was intended for loans classified as substandard by the lender's supervising agency. The rules specified that, if necessary, the lender would have to write down more than the initial 10 percent of principal to meet the cash flow requirements. Loans with adequate security generally do not require a write down by the lender to obtain a guaranty under the regular loan guaranty program. Announcements on February 6 and 22, 1985, of modifications in the program reduced the cash flow requirement for eligible participants from 110 percent to 100 percent of projected cash flow and permitted lenders to take the required principal write down in the form of interest rate reductions to borrowers spread over several years. Moreover, assurances were given that additional loan guaranty authority would be made available if needed. However, it became apparent in March, 1985, that loan guaranty authority was not available to restructure real estate loans. Loan guaranty authority is available to restructure loans over seven years with the possibility of a balloon payment. Final regulations were published on February 15, 1985, so the program has the clear advantage of being in place.

If available for real estate loans and with adequate amounts of loan guaranty authority, debt restructuring through federal loan guarantees and Farmers Home Administration loan set-asides would provide buoyancy to land and machinery markets to help the asset restructuring that must take place to occur on a rational basis. Loan guarantees only minimally interrupt and distort economic relationships and represent a good solution in many ways. The farmer is encouraged to remain with debt obligations on a deferred payment basis rather than to file for bankruptcy or use other remedies.

An "upside" eligibility test is imposed by requiring a significant write down of interest or principal or both by lenders. Borrowers who are likely to be able to service outstanding debt and stabilize their financial condition would not be admitted to the program. The "downside" eligibility test, rendering those ineligible for the program who have no reasonable likelihood of surviving financially, is administered in the form of the cash-flow requirement.

One of the most difficult features of the DAP program was in dealing with outstanding unsecured debt. The rules specifically required that the loans remaining after the debt restructuring must be adequately secured. Morover, the rules required that the plan submitted deal with all debt, secured as well as unsecured. The secured and unsecured creditors are expected to negotiate for write-offs and repayment terms which may be different by the security position of creditors.

Every effort should be exerted to making the federal loan guaranty program work. It is the only general program available to ease the debt problems in the immediate future.

Evaluation

In general, loan guaranty programs such as DAP are most likely to be successful in stabilizing borrowers with relatively modest amounts of debt who need an opportunity to stretch out principal payments to gain economic stability. The DAP does not specifically encourage debtor adjustment; rather, the program encourages lender adjustment in terms of write-downs in principal balance or interest rates or both. A loan guaranty program can encourage lenders to take risks.

An alternative of public intervention through debt restructuring and loan guarantees can be evaluated with the same set of eight criteria outlined and discussed above.

Direct and indirect costs. The cost to taxpayers of a program of loan guarantees and debt restructuring would depend principally upon whether the economic condition of agriculture continues to deteriorate. With the federal exposure in the form of loan guarantees, economic stability in agriculture or improvement in the economic condition of farm firms could work to keep federal costs at a low level, well under $1 billion. On the other hand, continued weakening of the economic condition of agriculture would be expected to be translated into payment on loan guarantees previously made. Quite clearly, loan guarantees place the federal government in a position of participating in any further losses incurred.

Who receives benefits. The immediate beneficiaries of a program of debt restructuring with loan guarantees would be farmers whose financial position was stabilized by the program. With borrowers stabilized, lenders and others linked financially to the farmer could become stable as well. In the greater sense, such a program would help to stabilize collateral values and thus create widespread benefits in rural communities.

Whether likely to stabilize farmers and others. The extent to which a program of debt restructuring with loan guarantees would stabilize farmers would be dependent upon the degree of participation in the program which in turn would depend upon the eligibility requirements imposed on borrowers and the obligation imposed on lenders in the form of interest reductions or principal write-downs. The more onerous the requirements, the lower the expected level of participation and the less of an effect in terms of stability of farm and ranch firms.

Risks of declines in asset value. The consequences of any further declines in farm and ranch asset values would be shared among the asset owner, the lenders and the federal guaranty agency. The terms of the guaranty would control the sharing of loan losses as between the lender and the federal guaranty agency. The asset owner's loss would be limited to the asset owner's equity in the asset (for non recourse debt) or the owner's non-exempt assets (for recourse debt).

Risk of changes in interest rates and costs of production. Programs of debt restructuring and loan guarantees may provide for a **reduction** of interest rates but usually not a further cushioning against future increases in interest rates or other costs of production. Therefore, risks of changes in costs would be borne immediately by the farmer or rancher but secondarily by the lender and the federal guaranty agency as borrowers would move to insolvency and inability to maintain payments on the restructured debt.

Benefits of future increases in asset value. As presently formulated, the federal Debt Adjustment Program does not attempt to recover federal costs in the event that better economic times return to agriculture. Likewise, no attempt is made to require borrowers to repay lenders amounts of principal written down or interest reduced under the program. Both possibilities have been discussed. As it is, increases in asset values would benefit those owning assets at the time of increases in value.

Encouraging resource adjustment. Some resource adjustment would generally occur in order to meet the cash flow requirements imposed as a condition of program eligibility. However, the emphasis is on creditor forgiveness of principal or reductions in interest in order to meet the cash flow test. The fact that farm and ranch firms even under debt restructuring and loan guarantees are subject to economic forces means that the firm would not be immune to pressures for resource adjustment.

Administrative costs. As public intervention programs go, a debt restructuring program with loan guarantees would entail modest administrative expense. Much of the cost of developing cash-flow plans is borne by the borrower and the creditors. With the loan left in place, the lender continues to bear the costs of servicing the loan. Assets remain largely within the ownership and control of the farmer. The major administrative costs to be borne by the program are the costs associated with review and evaluation of applications, the monitoring of approved arrangements and the costs involved with guaranty payments.

Newly-created federal entity to facilitate land holding and financing

Because of the importance of interest rates in any effort to stabilize farm and ranch firms, one approach would be to channel state and federal funds directly into interest rate reductions for farm loans. At the same time, there is a need for assets, particularly farmland held by those so heavily indebted that retention of the assets is infeasible, to be insulated from the market.

It is believed that the two functions, interest rate reductions and a "holding tank" for farm assets, should be joined in one entity if possible. The proposal discussed below was first outlined in late November, 1984, and is receiving serious attention at the present time. The major proposals under study in the United States include one or both of the principal features of the plan. Unless the economic environment changes dramatically very soon, major adjustments in organization of farm and ranch firms must take place to reflect the realities of the 1980's. Farmers should be encouraged to develop realistic cash flow/reorganization plans that will, if possible, stabilize the firm. Some interest rate reductions (on the order of three to five percentage points) should be available to assist in making the cash flow/reorganization plans feasible. If the firm cannot be stabilized under those conditions, changes in enterprises, management approaches and asset ownership may be necessary.

The proposal discussed below for formation of an Agricultural Financial Corporation (AFC) would have two major components. One component, referred to below as Component B, would provide the supplemental financing for "buying down" interest rates on farm loans for feasible cash flow/reorganization plans but with an expectation that interest subsidies would eventually be repaid with some interest on amounts advanced. Component A would provide a mechanism for acquiring the assets, notably farmland, given up by farmers who are unable to develop a feasible cash flow/reorganization plan short of asset liquidation This entity could acquire land - (1) subject to foreclosure or bankruptcy, (2) from lenders holding land in inventory or (3) from farmers who are unable to service the real estate debt.

Although various possible designs of entities would appear to be feasible, a federally chartered corporation, similar in some respects to the U.S. Commodity Credit Corporation, would be the basic vehicle. It is anticipated that the corporation, referred to here as the Agricultural Financing Corporation, would have a governing board of perhaps 11 individuals which would be broadly representative of production agriculture, public and private sector lending and agribusiness firms and with significant consumer and taxpayer representation.

Land-owning entity - Component A

Basic features. The AFC would be chartered to acquire farmland through Component A, at a price set in relation to fair market value, and to take over existing secured indebtedness. The assets would be rented to farmers, with preference to prior owners of the particular asset, at a rental rate reflective of the fair rental rate of assets of that nature.

Lenders holding loans transferred to the Agricultural Financing Corporation with the associated collateral would be expected to take a write down to the value of the property or 10 percent of the obligation, whichever is less. Lenders would have the option of taking the principal write down in the form of interest rate reductions over four years after the agreement was entered into by the parties. The interest rate on loans within the program could be no greater than the best interest rate charged the best farm borrowers by the lender.

Repurchase of assets. Prior owners of assets who maintain continuous or near continuous rental of the asset, would be eligible to repurchase the assets at fair market value. To encourage farmers to repurchase assets as soon as possible, it would be appropriate to provide an incentive for early purchase. Thus, purchase during the second, third, or fourth years of the program could be at a percentage of fair market value below 100 percent with purchase after the fourth year at 100 percent of fair market value. If a prior owner did not exercise the repurchase privilege by the end of the fourth year, the property could be sold to others.

Cost of Component A. With the same assumptions as with Component B the annual cost for Component A would be comparable except for a greater administrative cost for Component A. With Component A, the AFC would function as an asset owner, thus entailing greater management cost than with AFC as a financing entity as under Component B. Also, under Component A the conveyance of assets into the AFC and eventually from AFC would pose additional cost considerations. The costs for Component B are discussed in detail below.

Funding the entity. Obviously, the major obstacle for such a federally chartered corporation would be the necessary financing to maintain payments due holders of mortgages and other security interests outstanding with respect to assets acquired. Several possibilities exist for financing -

- A Congressional appropriation could be used to generate the financing needed.

- The entity could be funded in part with Industrial Development-type bonds. In light of current resistance to extending tax-exempt bond financing and the probability that even with exempt bond financing the resulting interest rate would exceed the cash flow from rental of assets, total reliance on tax-exempt bonds is a doubtful possibility.

- A third possibility would be to utilize a mix of federal, state (and possibly local) funding on a formula basis in a partnership approach.

- A fourth possibility would be to use a mix of federal, state (and possibly local) funding with opportunity for low-risk private investor participation, also. A problem at present with private-investor participation as the sole source of investment is the difficulty in assuring a rate of return sufficient to attract investor interest and, at the same time, provide reasonable rental terms to those leasing the assets. With substantial public sector funding, a reasonable return to investors could be assured private investors. With private sector funding alone, the necessary return to induce investment in the current investment climate (in terms of rate of return and risk) would be sufficiently high to require either unacceptably high rental rates or substantial limitations on repurchase by tenants as investors were assured of increases in value over a period of several years as part of the inducement to invest.

The most feasible financing arrangement would seem to be a partnership effort with federal funding and significant state funding also on a formula basis. With a federal agency guarantee, a modest amount of private sector funding could be attracted with a market rate of interest paid.

Public sector funding would, in effect, be equity capital with changes in asset value inuring to the equity holders. The state and federal governments would, therefore, be making investments in land. Hopefully, all or a significant part of the funding would be recovered back on later sale of the assets.

Income tax consequences. One disadvantage of a separate corporation for holding assets would be the income tax consequences (taxable gain, recapture of depreciation, recapture of investment tax credit and recapture of other amounts) incurred on the transfer. It is suggested that legislation be sought deferring income tax recognition for five years so long as the prior owner continues to lease the property and the property is reacquired from the corporation within that time.

The erosion of capital to pay income tax would be substantial for some property owners if land were conveyed to a separate corporation in a taxable exchange. Unless legislation is enacted delaying the recognition of gain and the recapture events, Component A would appear to be accompanied with a cost sufficiently great to discourage its use by property owners with low basis assets. It would be anticipated that, in many instances, only a portion of the land would be conveyed to the AFC. The rest of the land would be retained by the farmer who would become eligible for supplemental financing as discussed below. Thus, many farmers would be able to select the land with the least potential income tax liability for transfer to the AFC. Income tax liability usually is paid ahead of unsecured creditors so suppliers and other unsecured creditors would be expected to have the greatest concern about use of Component A.

Limitations imposed by state law. Another disadvantage involves the state statutory limitations on ownership of farmland by corporations. At present, eight states in the United States have significant limitations on corporate ownership of farmland.

Several states with limitations on corporate acquisition of farmland, such as Iowa, exempt land acquired in the collection of debts or in the enforcement of a lien. Such exemptions would seem not to apply to the AFC. Federal legislation could be enacted that would override state statutory limitations on corporate land ownership. Constitutional limitations pose a more significant problem.

Financing entity - Component B

The other part of the congressionally-chartered corporation would involve the entity in a financing role. This part of the corporation would not involve actual ownership of assets.

Basic features. In the financing entity, the corporation would enter into contractual agreements with borrowers and lenders. The contractual agreements would have the following features:

- Lenders would agree to write-down the principal amount of the obligations by 10 percent of the obligations or by the amount by which the obligations exceed the fair market value of the assets, whichever would be less. As with Component A, lenders would have the option to take the principal write-down by reducing the interest rate for borrowers. In any event, participating lenders would be expected to reduce interest rates to the borrower by at least one and one-half percentage points for each year interest payments are received from the AFC. Because interest rate write-downs of 2½ percent per year for four years have a much greater economic impact during the four years than a 10 percent write-down on the loan principal over the term of the loan, lenders should be encouraged to select the interest rate reduction option. For this reason, the calculations in the example below assume that interest reductions are not discounted to present value. Interest rate reductions are also advantageous because lenders can avoid loss of capital in the initial year and can absorb the write down out of income over a four year period. Moreover, writing down 2 ½ percent per year makes it easier to deal equitably with loans with maturities under four years.

  Again, the interest rate on loans within the program could be no greater than the best interest rate charged the best farm borrowers by the lender.

- With Component B both land and non-land secured loans would be eligible for the program. If only land were included, a borrower could refinance with a higher debt load on the land and a lower debt load on machinery, livestock and crops. In order to avoid manipulation by placing loans on one category of asset, all business loans should be embraced within the program. In some instances, a lender may be sufficiently secured to be uninterested in participating. For lenders who can show a secure position, approval could be given to such lenders to neither participate in a write-down of principal nor to receive assurance of interest payment for the four year period.

- Borrowers would agree to make an annual payment to the lender on the debt obligations equal to a reasonable cash rental amount for the assets

- The AFC would advance the amount to lenders needed to maintain the interest payments on the loans. For the first two years, the funds would be advanced at no interest. The interest charge in the third year would be one-half of the cost for borrowing by the federal government for short-term funds. The interest charge would be the full cost of federal funds for the fourth year. It is anticipated that the corporation would terminate after four years. During its operation, the AFC would have a lien on the assets involved equal to the amount advanced by the AFC.

- Borrowers would be required to apply available funds not needed for debt service, operating costs and family living expense to reduction of principal balances.

- The borrower would have an option to terminate the agreement, pay the amount of the lien and have the lien discharged at any time. After five years, if the lien was not discharged, the AFC would have the option to have the assets sold to satisfy the lien. Security interests on the property at the date of the agreement would maintain their priority status. In the event of bankruptcy of the borrower or failure of the lender, the rights of the parties would be determined by the security positions of record.

- The management costs associated with Component B should be relatively modest. The cost for preparing reorganization plans containing necessary information for review on cash flow, management ability and value of collateral would be borne by the lenders and the borrower. It would be necessary for the AFC to develop a review function. In addition, the AFC would incur costs for maintaining the organization as a financing entity including accounting, credit and legal costs.

The operation of an Component B type plan can be illustrated with the following example.

Example (2): A 160 acre tract of land with a fair market value of $200,000 is encumbered with a 10 percent loan secured by a first mortgage equal to $220,000. The interest is $22,000 per year. Under Component B, the lender would take an interest rate write down of 2½ percent per year on the loan (amounting to $5,500 per year). The land would be retained by the borrower. The borrower would pay $12,000 per year on the loan (an amount assumed to equal a reasonable cash rental). The corporation would provide the additional $4,500 per year to keep the interest current. If, four years later, the borrower were to elect to terminate the agreement, the lien could be released by paying $18,000 to the AFC plus accrued interest of $1980 under the above formula (assuming an eight percent federal borrowing rate). The interest charged on the amount advanced would be calculated as follows assuming the cost for borrowing by the federal government for short term funds is eight percent -

Year 1 - the landowner would pay $12,000 cash rent (an assumed six percent of land value). The lender would write down the interest charge by $5,500. The AFC would advance $4,500 with no interest charged on the $4,500 advanced.

Year 2 - the landowner would pay $12,000 cash rent, the same as in Year 1, with the lender writing down $5,500, with the AFC advancing $4,500 and with no interest charged on the $4,500 advanced.

Year 3 - the landowner would pay $12,000 cash rent the same as in Years 1 and 2, with interest charged on the $4,500 advanced at four percent (one-half the federal borrowing rate for short-term funds) plus four percent on the amounts advanced in Years 1 and 2 or $540. The total cost to the land owner would be $12,540.

Year 4 - the landowner would pay $12,000 cash rent, as in Years 1, 2 and 3, plus eight percent interest on the amounts advanced in Year 4 plus eight percent interest on the amounts advanced in Years 1, 2 and 3. The total cost to the landowner would be $12,000 plus $1440 or $13,440.

Income tax consequences and state limitations. By leaving ownership of the assets in the hands of the borrower, income tax liability would not be triggered because of participation in the program. The arrangement would also side step state-level limitations on corporate land ownership.

Under Component B increases in value of assets would eventually inure to the benefit of the Agricultural Financing Corporation as liens were paid off. Increases in value above the amounts advanced by the AFC with interest would remain with the borrower.

In effect, Component B would involve an interest-free or below market rate loan secured by a lien on the property. To the extent the property increases in value by the time of termination of the arrangement by the borrower, the AFC would recover the amounts advanced. The public funds would be "at risk" and would not be recovered back if asset values continue to decline. Asset values are near levels at which investments in farmland will cash flow and at levels representing a reasonable return as an investment alternative.

Cost of Components A and B. The key to determining the cost of the program under Components A and B and to determining the success of the program in insulating assets from the market is the participation rate by lenders. The calculations below are for the first four years of the program under the assumption that the costs would be the same for Component A as for Component B. Accordingly, Component B costs appear below as though Component A were not in use. The major differences in cost for Components A and B would be - (1) the slightly higher administrative costs for Component A and (2) interest payments for the third and fourth years under Component B. In addition, the costs beyond the initial four years would be different for the two components inasmuch as the AFC would be the property owner under Component A. If property values had risen by that time, the assets could be sold with costs previously incurred recovered in whole or in part. If property values had declined further, the AFC could incur losses if the assets were sold.

For the prescribed interest rate reduction percent per year, the lender is acquiring - (1) insurance that the interest will be paid and (2) the opportunity to delay liquidation from perhaps a near-certainty of liquidation and attendant loss now to a potentially more favorable situation in four years. Note that, with Component B, there is no guaranty of principal on loans at the end of the four year period.

It is assumed that the participation rate in the program would be 90 percent of the debt held by those with debt-to-asset ratios of 41 to 70 percent and 50 percent with those with debt-to-asset ratios of greater than 70 percent. The reasons for the lower rate of participation for the more heavily indebted group are - (1) some of that group have already been liquidated and (2) some that have not been liquidated will be unable to meet the cash flow and management skills requirements.

For purposes of these calculations, the cash rent amount on land and the lease amount on non-real estate assets produces an interest rate shortfall of approximately four and one-half percentage points. In the interest of simplicity, the calculations assumed a four and one-half percentage point write down (comprised of the AFC payment and any interest write down by the lender) on all eligible loans. Of the four and one-half percent, the lender's contribution (assuming an interest write down rather than a principal write down) was considered to be constant. The AFC would pick up the difference. One important reason also for using a uniform interest rate supplement is to discourage shifting of loans between categories of property (real and non-real). It is suggested that the program adopt this simplifying assumption and provide further that if interest rates rise or decline significantly, the supplement would be adjusted administratively. Thus, the uncertainty of impact from increases or decreases in interest rates would be borne by the AFC. The four and one-half percent figure presently separating the equivalent "rental" amount paid by the borrower and the cost of funds is viewed as a "base" figure to be adjusted from time to time. With this approach, success in reducing the federal budget deficit and reducing interest rates would lessen the role of the AFC.

Under the assumptions stated, the national cost would be as follows -

Year 1 = 1,918,914,600
Year 2 = 1,918,914,600
Year 3 = 1,688,644,480
Year 4 = 1,304,860,920
$6,831,334,600

Under an assumption of 100 percent participation by both groups of borrowers, the annual costs under an assumption of 100 percent participation would be -

Year 1 = 2,571,682,900
Year 2 = 2,571,682,900
Year 3 = 2,263,080,952
Year 4 = 1,748,744,372

$9,155,191,124

Policies common to both components. Several provisions would apply to both Component A and Component B -

- The farmer would be expected to show positive cash flow projections and good management skills after implementation of the reorganization plan.

- It is essential that input suppliers be assured payment for feed, seed, fertilizer, chemicals, fuel and other inputs supplied. Participating lenders should be required to work with suppliers in dedicating a specific portion of the line of credit for direct payment to vendors. For past accounts, the rules should anticipate that participating lenders who are willing to do so would assume the obligations with a write down such that the lender would not lose by paying off the obligations to vendors. Otherwise, vendor obligations could be brought into the program but without assurance that the principal amount would be paid.

- Inasmuch as the Farmers Home Administration as an agency of the U.S Department of Agriculture has authority to restructure its own loans, it is not anticipated that FmHA loans would be eligible for this program.

- For both components, it would be important to place a cap on interest rate increases imposed by the lender (such as with variable interest rate loans) once a loan was in the program. Any increases in interest rate should be limited to increases in the cost of funds to the lender: lenders should not be permitted to raise interest rates on loans in the program to cover loan losses elsewhere.

- For loans with balloon payments, lenders should be required to accept payment patterns for the loan applicable to the period before the balloon payment as a condition of participation in the program. Interest only, not principal, would be due on participating loans.

- For either component, it would seem appropriate to establish an enrollment period of two years for participation in the program. Those entering the program after its commencement would be placed on a trajectory consistent with assumed termination of the entity after four years.

- For loans buttressed by guarantees on the part of those outside the firm (such as a parent) it would be necessary to include the guarantor's firm and assets in the program as a condition of eligibility. In effect, the program should encourage lenders to pursue all available remedies short of foreclosure or forfeiture before turning to this program.

- If property (such as farmland) were to undergo a change of use such as to commercial or industrial use, the assumed rental paid by the borrower should be adjusted accordingly. The same would be the case if income in the same use were to change substantially.

Risks under Components A and B. The components differ significantly in terms of who would gain or lose in the event of changes in land values.

- For land under Component A, the AFC would own the property. As landowner, the AFC would receive the benefits of any increases in land values (until the land was repurchased by the former owner or the land was sold to another) and the AFC would suffer any losses from further declines in land value. The former owner would not participate in changes in land values, either positive or negative.

- For property under Component B, the maximum loss in the event of further declines in property values would be the amounts advanced to keep interest current. If land values were to rise, the AFC would benefit to the extent of recovering back amounts advanced plus interest under the formula for interest charged on amounts advanced by virtue of the lien held by AFC. The remaining risks of further changes in land values would continue to be borne by the landowner. Thus, the upside potential gain and the downside risk would be less for the AFC for assets under Component B. The landowner would continue to be a major participant in risk sharing as to changes in land values.

Conformity with other policies

If a federally chartered corporation is created, it would seem appropriate to require that the assets (notably land) be managed in conformity with federal policies. Thus, it is anticipated that financing arrangements would require participation in soil conserving programs. In addition, if land ownership reached a sufficiently high level, a portion of the land could be idled on a short run basis as part of an overall supply management program.

The formation and operation of a federally chartered landowning or financing corporation should be viewed as in keeping with a long standing tradition of policies to assure the private holding of farm assets on a basis of widespread ownership. Without such an entity, sales of land at distress levels could result in farm land ownership moving into the hands of off-farm investors or into the hands of lenders. It is not clear what impact such ownership would have on the structure of agriculture ultimately or whether higher levels of off-farm ownership of farmland would continue. Moreover, it is not abundantly clear what effects, positive or negative, would accrue from greater off-farm ownership of land.

With such an entity there would be assurance that the land would be available to operators who had previously owned the land and assurance that the land would be available for purchase by the operator at a later date (for property under Component A) or would remain in operators' hands (for assets under Component B).

Evaluation

The Agricultural Financing Corporation, by encompassing a "holding tank" for farmland and a unique interest rate "buydown," poses special problems of evaluation.

Direct and indirect costs. Estimates of the cost of public intervention through the AFC appear in the discussion of the proposal. The cost estimates were made as of early 1985. Substantial deterioration has occurred in the financial position of firms since that time. In general, the greater the deterioration, the greater the expected cost. The projected cost of $1.9 billion to $2.5 billion per year remains a reasonable estimate although the figures would now appear to be on the low side. A range of $2.5 to $3.5 billion per year for four years would seem appropriate for planning purposes.

Under one scenario, the public cost could be substantially less. The appearance of a major effort to stabilize agriculture and to stabilize asset values would be expected to induce private sector investment that has been waiting for asset values to go lower. The net public cost might be less than $1 billion per year.

Who receives benefits. Under the AFC, the unique combination of a "holding tank" and supplemental assistance on keeping interest payments current is designed to stabilize the financial position of a substantial segment of indebted farm and ranch firms. The immediate beneficiaries are the farmers and ranchers who are indebted but not so heavily indebted as to make survival a low probability outcome. The benefits should also, realistically, be viewed as extending indirectly to lenders, suppliers and others with an economic stake in rural communities. In a larger sense, benefits would be obtained by all farm borrowers inasmuch as collateral values should be stabilized as a consequence.

Whether likely to stabilize. The nature and magnitude of the public intervention proposed through establishment of the AFC are such that the effort should, indeed, work to stabilize asset values. It would appear that the resultant stability should be transmitted through to lenders, suppliers and others who are economically dependent upon farm firms.

Risks of further declines in asset values. For the land held in the Component A part of the AFC or the holding tank, risk of further declines in asset values would rest with the AFC as owner of the assets.

The risk of further declines in asset values would be borne quite differently for the Component B financing function. For that side of the operation, the risk of further decline in asset value would continue to rest with the borrower and the lender. The AFC supplementation to keep interest payments current would cease at the end of four years (or at the end of any extensions beyond four years) with the residual risk remaining with the asset owner and the creditor or creditors.

Risk of further changes in interest rates and production costs. For both Component A and Component B operations, the AFC would be the "shock absorber" as to changes in interest rates. The farmer as tenant would be expected to pay a reasonable annual amount in the nature of a cash rent, which would change from time to time. The lender would take an appropriate write-down of the interest rate with the remaining amount paid by the AFC.

The farmer would bear the risk of further change in production costs generally except to the extent production costs affect the reasonable rental amount paid each year.

Benefits from increases in land values. For land held in the Component A holding tank, future increases in land value would inure to the benefit of the AFC. If repurchased by the original landowner or purchased by another, the sale would presumably be at fair market value with increases in value captured by the AFC. For property receiving supplemental financing from the AFC, any increase in asset value would inure to the benefit of the property owner.

Encouraging resource adjustment. The AFC is specifically designed to encourage resource adjustment. Farmers and ranchers would be encouraged to give up land to the holding tank (Component A) with the land rented back to the farmer (if the farmer wishes to rent it back and there is no compelling reason not to) and with eventual repurchase of the land by the farmer. If not repurchased within five years (or any extension of time) the land could be sold to another.

For land and other assets retained the farmer could qualify for supplemental financing of interest payments with a lien to secure eventual repayment.

Administrative costs. The costs to administer the AFC would be significant but not unreasonable. Component B operations would carry the usual costs of a supplemental lending operation. Component A would entail somewhat greater costs because of asset ownership and transfer but the costs should be modest even in light of the additional management required for Component A.

IV. Future structure and financing of farm firms

The future structure of farm firms, and the way farm firms will be financed, will be substantially dependent upon - (1) whether a major public intervention effort is implemented: (2) the relative cost of labor and capital; (3) economies of scale from production, input acquisition and marketing; (4) applicable tax and commodity support policies:

and (5) the relative health of the farm and non-farm economies. The first point is discussed in the preceding section.

Cost of labor and capital

A subtle but powerful shift in the relative costs of labor and capital has occurred in the past decade that has important implications for rural areas. In the 1970's and before, but particularly in the decade of the 1970's, the real cost of capital (the stated interest rate for borrowing less the rate of inflation) was low, on the order of four percent or less, and in several quarters in the 1970's the real cost of capital was negative. Labor, on the other hand, was perceived as high and rising in cost. The consequence was a substitution of capital for labor as larger capacity equipment was purchased and greater use was made of manufactured inputs.

By the mid-1980's, the relationship of capital and labor had changed dramatically. The real cost of capital had risen to 10 to 12 percent as the rate of inflation had declined and interest rates for farm lending had remained in the 12 to 14 percent range. At the same time, the cost of labor was perceived as plateauing in cost if not declining. The expected outcome is a substitution of labor for capital. The result of the changed relationship of capital and labor in cost terms is likely to be greater use of labor in agriculture, a slowing in the trend toward fewer and larger farms and a shift toward less costly machinery and equipment.

For the longer term, looking ahead to the latter part of this century, it is not clear what the relationship of capital and labor will be. At the moment, a return to the low-cost capital of the 1970's appears highly unlikely. High cost capital relative to labor could be expected to slow the trend toward fewer and larger farms.

Economies of scale

Available data provide some support for the position that input-purchasing and output-marketing economies will continue at modest levels for larger firms and that technical production economies will likely increase. Again, technical production economies are not unrelated to the relative cost of capital as discussed in the preceding subsection.

Much of the technology of the next two or three decades is likely to be from biotechnology. At the moment, it appears that the technology is likely to be output increasing or cost decreasing or both but it is not clear whether the technology will be scale-neutral.

Tax and commodity support policy

The current mood in the United States is heavily oriented toward curbing tax-induced investments in agriculture although there is some concern about encouraging outside investment to stem the declines in asset values. In recent years, the Congressional sentiment has been to favor limitations on participation in government price and income support programs. Continuation of limitations seems likely.

Health of farm and non-farm economies

If the financial health of the farm sector remains weak for a significant period, and the health of the general economy remains relatively strong, the vulnerability of agriculture to outside investment will become more apparent. The expected outcome could be increased ownership of agricultural assets, notably land, by nonfarm investors. During the Great Depression of the 1930's, land ownership by those farming the land dropped to about 25 percent of the total in several states in the United States. By the 1950's, that figure had climbed above 50 percent. Quite clearly, a mix of owned and rented land is important for a healthy agriculture. Availability of land by rental keeps the barriers to entry relatively low and enables beginning farmers to get started in farming with a modest capital investment.

If the non-farm economy were to weaken substantially the economic means to acquire farm assets would decline and the general willingness to support intervention efforts for or on behalf of agriculture would undoubtedly decline. Certainly, an economy that is running a $210 billion budget deficit and a $150-$160 billion trade deficit cannot be viewed as healthy.

V. Type of capital expected in the future

Traditionally, agriculture has been financed heavily by pure equity capital (provided by farmers, mostly from accumulated earnings) and pure debt capital (provided by commercial, government or private lenders). Relatively little use has been made of "hybrid" types of financing.

Until farm firms have increased substantially in size, it is doubtful whether that pattern will change greatly. As noted in the preceding section, greater non-farm ownership of land is anticipated. However, the relatively low rate of return from agricultural production and the nature of agriculture as a nearly perfectly competitive sector are unlikely to attract widespread investor interest as an alternative investment. Thus, for some time to come, traditional patterns of financing are likely to continue. Some innovative financing approaches may emerge but will probably be on an experimental basis and not be widely adopted for some time.

The data indicate that the survivors of the current financial crisis will tend to be the older operators with relatively little debt. On the average, the survivors will tend to be slightly smaller in size than those who fail. For some time to come, farmers and ranchers will almost certainly adopt a more conservative stance on use of debt for expansion. That factor plus the expected high real cost of capital relative to labor will militate against rapid expansion of firms.

The amount of land - (a) held by those financially unable to retain their assets and (b) held by those approaching retirement suggests that the structure of agriculture at least in terms of land ownership will be substantially shaped in the next decade. As noted in this paper, the outcome is not yet clear and will depend upon several variables including the nature and extent of public intervention, the level of interest rates in nominal and real terms, the pace of activity in the non-farm economy as well as the economic health of the farm economy and perceptions of profitability for agricultural investments.

Footnotes

[1] See generally N. Harl, "Problem's of Debt in Agriculture," 6 J. Agr. Tax. & Law 689 (1985); N. Harl, "Debt in Agriculture: Causes and Possible Solutions," in *Farm Credit Crisis*, Serial No. 99-1, Hearing Before the Subcommittee on Conservation, Credit and Rural Development, Committee on Agriculture, U.S. House of Representatives, 1985, pp. 273-305; N. Harl, "Agricultural Credit Problems," in *Impact of Budget Proposals on Agriculture Issues*, Serial No. 99-2, Committee on the Budget, U.S. House of Representatives, 1985, pp. 16-27., N. Harl, "Restructuring Debt in Agriculture," in *Long-Term Farm Policy to Succeed the Agriculture and Food Act of 1981*, Serial No. 98-70, Committee on Agriculture, U.S. House of Representatives, 1984, pp. 196-206., E. Melichar, "A Financial Perspective on Agriculture," 70 Fed. Res. Bull. 1 (1984). See also *Farm Finance Survey* (Iowa Crop and Livestock Reporting Service, March 28, 1984); R. Jolly, "Farm Finance Survey: Asset and Debt Distribution," Iowa State University (Coop. Ext. Service), June 1984., *1985 Iowa Farm Finance Survey* (Iowa Crop and Livestock Reporting Service, April, 1985); Pederson, Watt & Vreugdenhil, "Farm Financial Stress in North Dakota," N.D. Farm Research No. 4, 1985.. *Financial Characteristics of U.S. Farms, January 1985*, Agric. Info. Bull. No. 495, July 1985; *The Current Financial Condition of Farmers and Farm Lenders*, Agric. Info. Bull. No. 490, Econ. Res. Service, U.S. Dep't of Agriculture, March 1985.

[2] E.g., "Bitter Harvest," **Newsweek**, Feb. 18, 1985, pp. 52-60.

[3] See N. Harl, "Problems of Debt in Agriculture," 6 J. Agr. Tax. & Law 689, 689-691 (1985).

[4] A debt to asset ratio of 70 percent means that for every $10 of assets, the debtor has $7 of debt.

[5] *Financial Characteristics of U.S. Farms, January 1985*, Agric. Info. Bull. No. 495, Econ. Res. Service, U.S. Dep't of Agriculture, July 1985.

[6] The real interest rate is the stated or nominal rate less the rate of inflation.

[7] Harl, **supra** note 2 at 693.

[8] *Financial Characteristics of U.S. Farms, January 1985*, Agric. Info. Bull. No. 495, Econ. Res. Service, U.S. Dep't of Agriculture, July 1985, Table 1. The figure for 1985 is projected to be $210.8 billion. **Id.**

[9] Pederson, Watt & Vreugdenhil, **supra** note 1.

[10] 1985 Iowa Farm Finance Survey, **supra** note 1.

[11] **Id.**

[12] **Id.**

[13] **Id.**

[14] **Id.**

[15] **Id.**

[16] Cash flow is defined as the amount needed to pay cash production expenses, interest and principal on outstanding debt and family living needs. *Financial Characteristics of U.S. Farms, January 1985*, **supra** note 1 at 14.

[17] *Financial Characteristics of U.S. Farms, January 1985*, **supra** note 1 at 1.

[18] **Id.** Table 9 at 19.

[19] **Id.**

[20] See Jolly, R.W., A. Paulsen, J.D. Johnson, K.H. Baum, and R. Prescott, "Incidence, Intensity, and Duration of Financial Stress Among Farm Firms," paper presented at 75th Annual Meeting of The American Agricultural Economics Association, Ames, Iowa, August 4, 1985.

Farming for profit with financial resources

A Canadian perspective

Daryl F. Kraft

Most of Canada's farmers directly or indirectly are affected by world market conditions. Prices received by farmers are either paid by importing nations or influenced by international competition. Many inputs such as farm machinery, fertilizer, pesticides and money move freely across the Canadian border. Both farm revenues and costs vary with the world economic conditions. Second century opportunities as well as pitfalls are more likely to originate from world events than from changes in the domestic scene. How can Albertan farmers best prepare for future opportunities or pitfalls?

This paper attempts to answer this question by analysing the economic setting Alberta farmers have contended with in the past 30 years, by suggesting what the environment will be like in the second century and by recommending a financial strategy for the future.

Risk and uncertainty since 1950

Year to year income variability is caused by risky or uncertain events. If the future was known with complete certainty then farm budgets and projected cash flows would be correct every time. Management would involve simply making sure all the jobs identified to be completed were in fact done. In a riskless world, farm management would, in effect, become farm administration. However, Alberta farmers have never been simply administrators and never will be simply administrators. They must contend with risk and uncertainty. Therefore Alberta farmers must manage their business by adjusting to all unknown future events.

A number of the events are not known to the individual business man, but because these events occur in a predictable manner they can be insured. These include such events as hail, fire, injuries and automobile accidents. Whereas such events could spell financial ruin for a business, the ability to insure protects the operation in case these events occur.

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Alberta farmers recognize the risky nature of growing crops in a semi-arid, cool climate. Year to year yield variability in the Prairie region exceeds nearly all major grain growing areas in the world. Whereas the Soviet Union or Australia are often characterized as areas with large year to year changes in production, neither shows more variation in crop yield than the Prairies. Yield risks are known and Alberta farmers must plan for bumper as well as poor crops. This is an environmental fact when you grow crops in a cool semi arid region.

Another type of variability is far less predictable but also very much a fact of farming. This variability takes place in the markets for agricultural products as well as the markets in which farmers purchase their inputs. Insurance companies do not offer premiums to guard against falling commodity prices or rising interest rates. Insurance does not work because no one can predict the events in the market like they can automobile accidents or hail storms. Therefore, the farm manager must account for market uncertainty when planning expenditures, production and sales. An insurance policy cannot guard against low final payments from the Canadian Wheat Board or higher interest rates on a line of credit.

Market uncertainty can be analysed in a number of ways. Table 1 shows one way of characterizing the price uncertainty experienced by the Alberta wheat farmer. During the spring when plans are being made as to how much wheat, barley, oats, flax, or canola to seed an indicator on the probable price that crops will sell for is the current price. In other words, how good an indicator is the current price for a crop sold next fall or spring? Table 1 shows that for the period between 1949 and 1969 the current price was an accurate indicator of the price for the following year. However, since 1970 the prevailing price at the time of seeding was likely to be only within 25% of next year's price. For example, between 1949 and 1969 the price only changed 5% for 11 of the 20 years, it increased or decreased between 6% and 15% during 6 years and rose more than or fell more than 16% in 3 years. There was a tendency for next year's price to range closely around the current price. In the 1950's and 1960's farmers could plan next year's crop on this year's price. After 1970 the stability of prices from year to year disappeared. Next year s price could just as easily be 25% higher as it could be 25% lower. Over the past fifteen years price instability has characterized the world grain markets.

The same conclusion also holds for the livestock markets. Table 2 shows the 6 month price variability of hogs. Between 1961 and 1970 the price changed only +5% from one production period to another 30% of the time but the same stability occurred only 10% between 1971 and 1982. Once again a hog farmer could not accurately rely upon the current price for the litter of pigs just farrowed.

While greater price volatility was occurring in the commodity markets the inputs that farmers were buying were showing the effects of inflation. Table 3 characterizes the farm input market for 1962-1971 and 1972-1984. During the earlier time frame the year to year price stability was most evident. Even interest rates changed less than ±5% in seven of the ten years. For example a 5% change meant the interest rate moved from 10% one year to 10.5% the next. In the 1970's and early 1980's prices nearly always increased. Pesticides and fertilizer price increases exceeded 25% on two separate occasions. Inflationary pressures meant that farmers expected higher prices the following year. The only unanswered question was how much higher.

Planning and farm management become more challenging in a world of price uncertainty. The net effect of the past 15 year period of price volatility is illustrated in Figure 1. Figure 1 shows the indices for the revenue, variable costs and gross margin from crop production. Gross margin is the difference between total crop receipts and variable costs. Variable costs include the expenditures necessary to till, seed and harvest the crops grown by Alberta farmers. Variable costs do not account for machinery replacement, debt payments on intermediate or long term loans, a fee for management or farm household expenditures. Gross margin represents a sum of money available to meet the aforementioned fixed commitments.

The index of variable crop production costs increased from 100 in 1971 to 349 by 1984. The rate of inflation was the highest from 1978 to 1981 and has slowed in the past four years. Crop receipts show two major surges, 1973 and 1980. Both events represent world wide strategies of grains and oilseeds. Prices fell as world supplies were replenished from 1974 to 1977. Once again supplies expanded and prices fell in 1981 and 1982. The combined effect of the United States Department of Agriculture PIC program and a 1983 drought brought about a minor 1983 rally in commodity prices. Since then prices have fallen. Whereas the index of crop receipts peaked at 317 in 1973 and 382 in 1980, the gross margin index soared to 594 in 1973 and 534 in 1980. Therefore in 1973 Alberta farmers had $594 available to meet overhead commitments for every $100 they had in 1971. By 1977 the gross margin had fallen to 255. Even though commodity prices had dropped and inflation persisted farmers still had 2.55 times the money available in 1977 than in 1971. These funds were available to pay debts, replace machinery and meet farm household needs. The volatility of the gross margin should cause farm managers to carefully examine any fixed financial commitment.

The gross margin represents the sum of money to meet financial commitments, replace equipment and meet farm household needs. These requirements are not normally very flexible. Farm machinery can be replaced when finances are readily available and purchases can be postponed when funds are short. However, the flexibility of household expenditures include only consumer durables such as cars, furniture and appliances. Most debts involve known fixed commitments. During periods of low gross margins higher debt levels increase the probability of the farmer reneging on a loan.

The relationship between the gross margin shown in Figure 1 mortgage debt and the consumer price index appears in Figure 2. The level of outstanding mortgage debt held by Alberta farmers is measured by the index in Figure 2. Mortgage debt grew from index 100 in 1971 to 228 in 1979. This only was slightly above the cost increases of meeting household requirements (CPI) and price increases in farm machinery. The ability to meet the larger commitments measured in terms of the gross margin index was well above the growth in overhead. However, after 1979 the rise in mortgages held by Alberta farmers skyrocketed. Buoyed by the availability of uncommitted funds between 1972 and 1979 Alberta farmers were willing to sign up for more and more mortgage debt. Farms expanded by buying more land and bidding the price higher and higher. By 1984 the level of mortgage debt was 5.6 times that held by farmers in 1971. The expansion in fixed commitments was not matched by a continual growth in gross margin. By 1984 the ability to meet higher fixed commitments had grown to just 303 while debt was 560. In other words the Alberta farm could have replaced the equipment and maintained the household at 1971 levels with the gross margin available in 1984 but farmers had taken on too much debt. The financial plight that many Alberta farmers find themselves in is attributed partly to variable income streams but primarily to excessive levels of mortgage debt. Even if commodity prices returned to levels of 1973 and 1980 the fixed debt commitment would consume all the gross margin.

What then are farmers doing to meet their financial obligations today? Most farmers are not replacing their equipment as it wears out or they are not setting money aside for the day when it does wear out. Most equipment on Alberta farms was purchased between 1973 and 1980. Since 1980 purchases have not matched depreciation and the average age of equipment has declined. Whereas farm machinery does not have to be replaced every year, eventually it does wear out. The fleet of tractors, combines and tillage equipment bought with the first surge in gross margin (1973) is now 12 years old. This equipment will be breaking down more frequently and the number of years a farmer can postpone replacement is rapidly diminishing.

The financial picture of the agricultural industry as it enters the second century will influence the direction of agriculture for many years. The relatively larger level of debt requires that farmers either meet these obligations or lose their business. The ability and willingness to adopt innovative cost reducing ideas that involve borrowing more money will be less as farmers enter the second century. Prairie agriculture has remained competitive because farmers have adopted new technologies developed by industry and government. Unless commodity costs are lowered by using better crop and livestock methods of production, the gross margin will decline further with rising input prices or falling commodity prices. Farmers must find that "better mouse trap" and invest in new technology if the industry is to prosper in the next century.

Economic environment and financial planning

The economic setting for the next decade is difficult to predict let alone forecast for the next century. While precise economic estimates are impossible to estimate a characterization of the economy can be attempted. The environment will continue to more closely resemble the variability of the past decade than the more stable times of the 1950's and 1960's. World commodity markets will roller coaster between relatively low prices when surpluses build up and skyrocket any time a shortage of food products occur. The price instability occurs because the consumption of food cannot readily be expanded when the world has bumper crops nor contracted when supplies dwindle. Whereas the growth in production has exceeded consumption in the past couple of years, the long term increase in production is governed by limited resources. Total consumption will grow with a larger population and a better standard of living. However, the source of the growth in consumption will be from developing countries. Many are laden with large debts and the future income growth depends upon capital investments they are not willing to or are unable to make. Because of their current debt levels the growth in income will be slowed and therefore Canadian sales of agricultural products will grow at a slower pace when compared to the past fifteen years. Therefore until worldwide consumption of grains and oilseeds is restored to an annual growth between 2% and 3% world commodity prices will experience downward pressures.

Commodity price variability will occur in a lower consumption growth phase because exporting nations will attempt to adjust their commodity supplies with government policies. The PIC program is an example of such a policy. These policies could either depress or support world prices. How much prices change is unknown but Alberta farmers should be prepared to accommodate change.

Inflationary conditions of the 1970's have moderated. Lower inflation rates simply mean that farmers can maintain a stable cost structure rather than expecting a rising but stable cost structure. Inflation does not introduce added uncertainty if it is stable. However, farmers should be prepared for periods of both stable and rising input prices.

What form of farm organization and which sources of capital are best for an economic environment with gross margins varying widely from year to year? Clearly the main characteristic must be **flexibility**. The organization must adapt to an extremely variable cash flow. It must survive periods of protracted shortages of uncommitted funds and be able to bounce back during periods of excess funds. The native species of Alberta plants and animals had to adapt to periods of extreme drought, periodic shortened growing seasons, lengthy cold winters and chinooks. Alberta farmers must adapt to extremely variable cash flows from one year to the next.

Equity capital is clearly preferable to debt capital in financing an industry with volatile gross margins. Equity capital does not have a fixed commitment. Instead, when economic times are favourable equity capital is rewarded with higher dividends, and when conditions result in cash shortages, no dividends are paid. Financing a farm business with debt increases the fixed commitment. The larger the commitment the greater the probability the farm business will not meet its financial obligations. Agriculture cannot depend solely upon debt capital.

Historically, the farming industry has relied primarily upon equity capital. The equity capital was passed between generations of family farmers, and also came from retained earnings of the farm business. Expansion with retained earnings or family savings was too slow for some farmers. Borrowed money with fixed commitments was used to expand the business. However, the amount a farm business can safely borrow depends upon the variability of the gross margin. During the 1950's and 1960 s, a period of stability, a farm business could borrow up to 70% of its capital needs with the risk that one year in twenty the business would be in arrears. In the past 15 years, if a business borrowed more than 40% of its capital requirements, the operation risked a 10% chance of reneging on its debt payments. During the next century farmers should be cautious and look closely before they borrow more than 20% of their business total capital needs.

How will farms grow without using more debt? The answer is that they will not expand as rapidly. The growth in farm size will slow unless substantial economies of size are present. Currently, with present technology the economics of scale are present but do not merit the cost savings to risk financial failure if all the expansion capital is borrowed. Therefore, farm size will be more stable along with the numbers of those farming.

Where will the equity capital come from? The major source will originate from the owner-operator while increasing amounts must come from investors who own the assets that farmers rent. This means a growth in absentee landowners. Farmers cannot afford to own all of their land if they have to borrow more than 20% to 25% of the money needed to purchase the land. Instead they must lease the real estate and share some of the price and yield uncertainty with the landlord. More farm machinery will be leased or the services supplied by custom operators than farm ownership. Farmers cannot afford to borrow the money to buy the extra combine. Instead, they must rely upon leasing the equipment when the need warrants the added harvesting capacity.

Finally, the corporate non-family farm is not likely to provide the equity capital needed to finance farming. While this form of organization provides a good source of venture capital, the flexibility of the corporate farm in managing the daily events of prairie farming has not proven to be successful. Unless the corporate farm can be more flexible in sharing the good and bad times with management and labour, the business will not attract equity capital.

Table 1. Price Variability of Wheat

Change in Price Between Years % Previous Year	Frequency 1949-1969	 1970-1984
25+ and Over	0	2
16 to 25+	1	3
6 to 15+	3	2
0 to +5	11	2
-6 to -15	3	3
-16 to -25	2	2
-25 and Less	0	0

Table 2. Price Variability of Hogs

Change in Price Every Six Months % Previous Six Months	Frequency 1961-1970	 1971-1981
21+ and Over	2	4
16+ to 20	3	3
11+ to 15+	6	4
6+ to 10+	4	2
0 to +5	10	4
6- to -10	2	5
-11 to -15	2	2
-16 to -20	2	3
-21 and Less	5	15

Table 3. Price Variation of Inputs

Change in Price as % Previous	Pesticides		Fertilizer		Farm Machinery		Interest	
Year Price	1962-71	1972-84	1962-71	1972-84	1962-71	1972-84	1962-71	1982-84
25+		2		2				3
16+ – 24+		1		3		1		3
6+ – 15+	1	5		4		8	2	2
0 – 5+	8	5	9	1	10	4	7	
6- – 15-	1		1	3			1	2
16- – 24-								2
25-								1

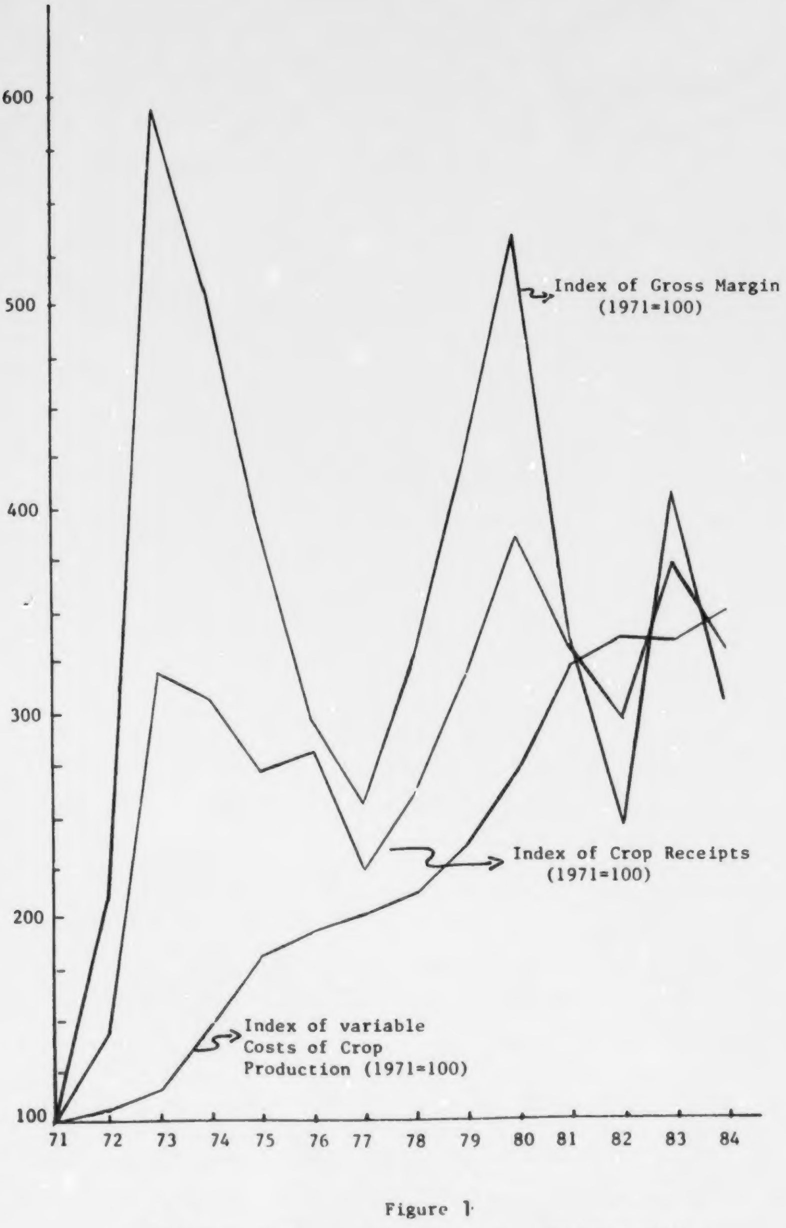

Figure 1

Relative Changes in Crop Receipts, Variable Costs & Gross Margins for Alberta

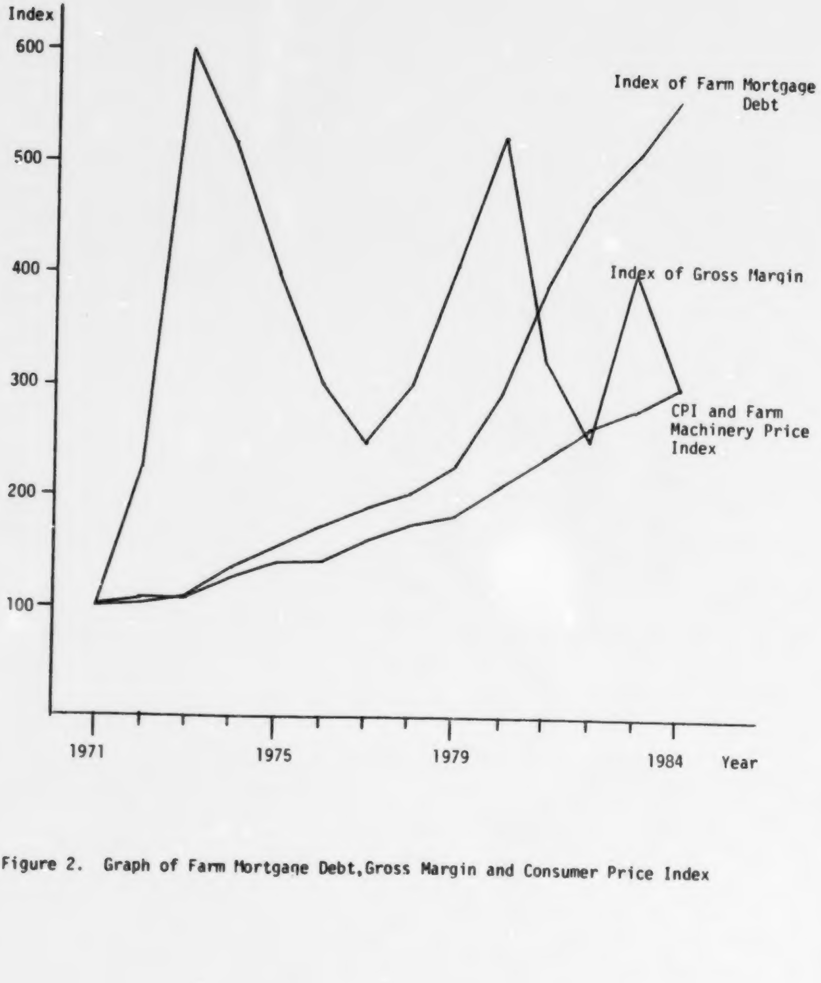

Figure 2. Graph of Farm Mortgage Debt, Gross Margin and Consumer Price Index

Farming for profit with financial resources

A farmer's perspective

Larry Greer

Flashback to 1975. Armed with a B.Sc. in Agriculture and two years in agri-business, I thought I was equipped to help take the family farm into the second century right then and there. However, rapid expansion in the late 1970's, the very sobering high interest rate years 1980 through 1982, financial restructuring in early 1983, and now the cost-price squeeze compounded by weather problems has modified my enthusiasm. Note I use the word modified because I think there exists an air of cautious optimism as the farming community looks to the future. Adjustments are going to have to be made by all segments of the industry but opportunities for change do exist and we must take advantage of them.

"Preservation of the family farm" is one of the most often used phrases expressed by agriculture policy makers. Perhaps it is time to redefine this concept with emphasis on the preservation of the primary production unit that most efficiently combines new technological, financial resources, production techniques and marketing strategies. In the future the farm family or extended family will continue to play a major role as the basis of this production unit but they will be families with a difference. One or more of the family members will likely have specialized training or extensive experience in various aspects of production, financing, marketing, or equipment design and maintenance.

The farm has to be viewed primarily as a business, and sound business practice dictates that a formal business structure be in place. In our case, the limited company format will continue to be used to distribute equity between the active participants in the farming operation. The interests of children or spouses not involved in the operation are protected by adequate levels of insurance carried by the various shareholders. This format meets the immediate needs and goals of our family operation. The immediate needs include:

- a mechanism to allow young members of the family into the operation once they are sure they want to make a long-term commitment and contribution.

Mr. Larry Greer is a farmer, High Prairie, Alberta.

- a supply of labour, experience and administrative skills that would be far more costly if obtained outside the family.
- a method of pre-determining wages or equity withdrawals thus enhancing budgeting and forecasting exercises.

The goals include:

- growth and expansion as opportunities and economic conditions permit.
- maintenance of an adequate standard of living for our family members.
- maintenance of a viable economic unit into the foreseeable future.

The structure is in place, so let us take a look at financing the operation.

Recent statistics show that 30% of Alberta farmers produce 80% of the agricultural output and use 75% of all operating credit. This group is the heart of the Alberta production unit and by far the biggest user of agricultural credit. Our farm is likely typical of this group in that we use a variety of credit sources. Long term credit is currently supplied by a crown corporation. The intermediate term credit requirements are supplied by a combination of bank financing and machinery company financing. Short-term credit is primarily bank financed. A valuable lesson learned in the early 1980's is to keep floating interest rate short and intermediate term money requirements to a minimum. As we look to the future, the most apparent financial need is to reduce our short-term debt. Production techniques (with emphasis on risk management) and marketing strategies are geared to short-term debt reduction. The key elements in the strategy being high production and good cash flow. The over all goal being that the company can self-finance a major portion of its operating requirements and continue to use federal cash advance programs to cover shortages until marketing is complete. The primary reasoning behind this strategy is to ensure the company is in a financial position to sustain a significant crop loss.

The increasing activity of machinery companies in the area of intermediate term financing is welcome. The introduction of competitive fixed rate of interest, interest waivers, and leasing options has increased competition in the intermediate term market and is providing a healthy alternative to bank financing. Consolidation and readjustment by agricultural manufacturers will likely continue into the foreseeable future, and hopefully will increase competition and responsiveness to producers' financial requirements.

The supply of long-term credit for agriculture at interest rates that reflect the expected return on the investment is very inadequate and a definite problem area. A pool of capital is required and could be satisfied by a variety of sources including the introduction of agri-bonds, investor financing supported by government guarantees, or direct government subsidization at levels below market rates. Another area that cannot be overlooked is equity financing. This type of financing is being used extensively by both public and private institutions in other segments of our economy, so why not develop a system that could meet the needs of the agriculture sector. I realize that in our farming operation before another round of extensive expansion is undertaken, all sources of long-term capital will have to be investigated, and if taking on new partners is in the best interest of the company then that alternative will have to be considered. In Alberta, the Small Business Equity Corporation is in place to stimulate the formation of pools of equity by providing investment capital for small business. (Mind you, think of the sales job it would take to convince a group of investors to invest in a farm these days. If a person could do that, there would be no need to farm anymore!)

Almost as important as the source of capital and its cost is the attitude of the financial institution and the development of a working relationship between lender and farmer. The farmer has to be forthright, honest and have developed a definite plan. The creditor must exemplify a thorough understanding of the situation and continue to maintain a certain degree of flexibility as economic conditions change. With the advancement of computer technology, the lender and farmer can easily calculate "what if" scenarios as input costs and market returns fluctuate thus giving both parties better insight into investment decisions and their consequences. From my point of view, I like financial institutions to place more emphasis on repayment ability and sound business practice rather than security. Another area I would like to comment on is the role of financial institutions as financial advisors. We have received both bad and good financial advice from financial institutions. However, the bad advice was much more damaging to us as a borrower than it was to the institution as a creditor. Admittedly, there was no compulsion on our part to accept the advice, but as we look to the future I believe financial institutions (both public and private) must play an expanded role in ensuring that advice and subsequent extension of credit is in the interest of both participants.

The title of this session is farming for "profit" with financial resources. However, in a free enterprise situation, if we are to have "profit", then we must deal with risk and "loss". Farming is a very risky business and in my opinion the ability of each production unit to manage risk and be in a position to sustain the "loss" is the singularly most pressing problem in farming today. Although the public may have to play an expanded role in sharing some of this risk in the future, the onus must remain on the individual producer to insure competitiveness.

In our area we think diversification is a basic necessity to combat weather-related risk and thus maintain both livestock and grain production units. New technology (i.e. new crop varieties, changes in fertilizer and chemical application) is adopted quickly if it demonstrates higher returns without significantly changing the risk. The computer will continue to become an increasingly important tool used for forecasting, record keeping, enterprise analysis and market information. Knowing production costs and subsequent hedging at prices above these costs is becoming commonplace as farmers strive to build in a profit. A situation that has evolved on our farm, and is significant in the reduction of financial risk and emotional stress, is that spouses work off the farm and thus a portion of the family's income is isolated from the farming situation.

Now I would like to take this opportunity to express some of my opinions on the public role as agriculture moves into the second century.

A fact that is understood by agriculture policy makers and financiers but not by the public in general is that there is a growing disparity between production units with adequate human and physical resources to farm profitably and those who do not have such skills. Governments are currently increasing their emphasis on providing opportunities for farmers to upgrade their record keeping and financial management skills. This is commendable and must be carried forward into the future. However, those producers that cannot adapt and face the increased competition must be allowed to phase out of the industry.

The maintenance of a beginning farmer program is necessary and must be continued into the future but let us not overlook the established producers and their ability to add production units or intensify and thus meet head-on increased competition in international markets.

A solution to the long-term agriculture credit problem is difficult and many alternatives include inherent distortions. Direct government sudsidization of long-term interest rates at levels substantially below market rates would undoubtedly attract non-farm investment into the farm real estate market. On the other hand, farmers themselves have a tendency to quickly adapt to any market distortion and consequently capitalize the benefit into land or other resources in an attempt to increase profits. The challenge is to find middle ground and develop a system to provide longterm capital without serious market distortion.

Farmers are on the verge of dealing with a technological explosion. Computer technology, bio-technology, and genetic engineering will all play a key role in enhancing farm efficiency. Developments such as new crop varieties, new chemicals, improved fertilizer application and improvement in livestock productivity will be adopted quickly. Production systems such as Intensive Crop Management, which can significantly boost production but also includes exposure to increased risk, will not be as readily accepted. I think farmers are ready to gear up and take on the competition but will increasingly look to the public sector to share the risk and help cope with the loss of crop or production that occurs as a result of uncontrollable factors such as weather. Western grain stabilization, red meat stabilization, crop insurance, drought aid and feed freight assistance are all designed to help cope with a loss whether it be income or production. I believe both producers and public policy makers would like to see the elimination of ad hoc programs and the development to a comprehensive insurance program under which producers will pay premiums (cost shared by the public) insuring themselves a level of return that is adequate to cover their individual losses. Again a balance must be maintained and those farmers that repeatedly have to rely on insurance will see their premiums rise to the point that they will no longer be able to compete in the agricultural production sector.

Farmers are facing difficult times but there still remains an underlying resilience in the farming community. This will be exemplified by a continuation of the basic resolve to rapidly adopt technology, increase production, market aggressively, pay down the debt and then turn around and do it better the next year and continue doing so year after year into the second century.

Individuals in domestic and international markets — target opportunities

Review of Canadian/Alberta performance

Mr. Kazuzo Ebihara

Ladies and gentlemen, it is my great pleasure to have this opportunity to talk about Canada and Japan, particularly in terms of past performance and future prospects of the food trade.

First of all, I would like to point out that Alberta and Japan have completely different natural environments which, by and large, create a complimintary bilateral relationship between the two. In this context, let me briefly explain about basic numerical facts surrounding Japanese agriculture. Currently, there are a total of 4,470,000 farming families with 20 million people against the total farmland of only 5.4 million hectares, about 50 million acres. This means that each farming family owns a little less than 3 acres. It must be noted that, however, about 60% of these families are actually engaged in side businesses, and the tendency is that more and more farming population, particularly those of the younger generation, is shifting into other business sectors. A few minutes ago, Minister Fjordbotten mentioned that Alberta has 30.9 million acres and only 65,000 farmers. That means that individual farms have a little less than 500 acres, so you can compare this with the figures I just gave you. As a result, the gross ratios of the total farm output (in Japan) and productivity have been relatively low during the last ten years despite the improvements of farming technology, and this tendency is likely to persist in the foreseeable future. In view, also, of a small but gradual decline in the total acreage, to give you an idea, we now have exactly 5,376,000 hectares in 1984 compared with 10 years ago, when it was 6,615,000 hectares. On the other hand, the food consumption, as a whole, appears to have reached a saturated state, although we can clearly witness the ongoing changes in the dietary pattern. This can be briefly described, that the intake of rice is declining and meat consumption is increasing, while other foods are keeping static.

Now, I will touch upon the importable agricultural products. In the past five years, from 1980 to 1984, imports of most of the major agricultural products have increased, with the exception of low sugar and dairy products, including eggs. The figures are: wheat increased

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Mr. Kazuzo Ebihara is President of Canada Packers (Japan) Inc.

5.2%; corn 5.9%; grain sorghum 5.7%, soybean 2.6%; and gradual gain is witnessed in fruits and fruit juices 16.1%; and the meat 36.8%; and the overall increase during these 5 years was 14.2%.

If we look back to the early days of the food trading between Canada, Alberta and Japan, the majority of the traded commodities were raw materials such as grains and oilseeds, that includes wheat, barley, rapeseed, which is now canola and flaxseed. These are still the main components in terms of volume and, as well, value.

However, in recent years, we can see signs of growth in value added items, particularly in the areas of processed and semi-processed foods. In my personal opinion, this tendency will be further pronounced in the immediate future. There are, among many other reasons, two most important incentives. One is that import of processed items including food will become easier, in terms of Japanese Government regulations prompted by the so-called "action programme". This "action programme" was announced by the Nakasone Cabinet in July of this year and it is designed to facilitate further opening of Japanese markets over a period of three years and it defines such measures as lowering of import duties, simplification of import procedures and liberalisation of restricted items. It's a very lengthy document consisting of about 50 pages, however, I would just like to quote a short sentence, particularly relating to the agriculture and fishery products.

> Subsection One - Agricultural and Fishery Products: regarding those agricultural and fishery products subject to import quota, Japan shall take action in accordance with the following guidelines, through consultations and negotiations at the GATT and other forums among the interested countries. Based upon these consultations and negotiations, Japan shall make efforts to improve market access to its market so it will conform with the international trend, while giving consideration to the actual situation of domestic agriculture and fishery industries.
>
> Then it goes on:
>
> 1. Bearing the new round in mind, the GATT Committee on trade in agriculture has already initiated work to draw up new rules that will cover all such measures affecting trade in agricultural products, such as import quota, including those with waiver, export subsidies, etc. The Committee's work aims at achieving: 1) further incorporation of trade in agricultural products in the GATT System; 2) improvement of conditions for market access; and 3) placement of export competitions under stricter disciplines. The Committee is, at the same time, to give due consideration to the special characteristics of agriculture in the work of making the rules. Japan will actively participate in forming a consensus on these rules in the GATT, thereby, promoting the Committee's

work and the negotiations for the new round.

2. With respect to beef and citrus fruits and other agricultural products on which arrangements are being made among the interested countries, Japan shall observe the arrangement in good faith. Also, with regard to their handling after the expiration of the present arrangement, Japan shall start the consultations one after another, according to the arrangement and shall take appropriate action with sincerity.

This is the quotation from this translation.

The other factor is the diversification and segmentation of the consumer market, whereby foreign manufactured goods will find the market on a more stable basis, because there are a certain number of consumers emerging as a segment of the market to entertain imported quality goods, particularly, for gift-giving purposes which we have twice a year in Japan involving an astronomical amount of money. The one is July, which is the Buddhist summer feast, called Ochugan and the other one is called Osabo which is like a Christmas gift in Western countries.

In order to further enhance the trade of value added products between Japan and Canada/Alberta, however, several key assumptions must be met.

From our many years of experience in dealing with such food items as meat, frozen vegetables and other agricultural goods, I wish to emphasize the following three points.

The first and foremost is a long term commitment and continuous presence in the marketplace. Among several words that mean "business" or "transaction" in the Japanese language, we have one particular word, pronounced as "*akinai*". As a matter of fact, *akinai* also means "never get tired" or "never become weary". In this respect, I wish to take this opportunity to thank the Alberta office in Tokyo for their continued and strenuous efforts that have been highly instrumental in raising the profile of Alberta products. The fact that I have come all the way to attend this conference will support this statement.

The second point is, proper marketing strategy through established human relations so as not to interrupt traditional systems in Japan, because such an interruption can easily retard the whole efforts in the past. As you know, there are 120 million plus population decently living on four islands only equal to 60% of the province of Alberta. Therefore, the word of "harmony" or in Japanese "Wa" is a must in doing anything in Japan.

The third requirement is, we need further study of exact quality requirements including packaging and presentation. It may perhaps make some of you feel offended, but in the processed food business with Japan, Canada's own standard, even if these are of statutory nature should not be taken for granted for marketing in Japan. To be very frank, we, ourselves, have made these mistakes in our business such as french fries, whole kernel corn, and beef primal cuts, to name but a few. On every occasion, we have rectified the situation, but is has always cost us a great deal of money and time.

Now, I would like to say a few words about the future outlook.

In the grain and oilseed sector, Canada, including Alberta, is enjoying her presence as one of the largest suppliers to Japan, and this situation is likely to continue in the foreseeable future. Further, I am hoping, personally, that your well-managed quality research that we have witnessed in the past history of the canola, will no doubt enhance the possibility in the areas of specialty grains and other specialty crops.

In the meat section, main emphasis has been put on beef from Alberta, and this has resulted in gradual recognition by Japanese buyers of the high quality of beef, particularly from the Province of Alberta. I can foresee gradual but constant growth in this sector under the concerted efforts between government and private sector.

The frozen vegetable sector is also highly promising. This includes items such as corn, potatoes and other vegetables.

Because of the time allotted to me, I will go into the conclusion. In conclusion, Japan is the largest food importer in the whole world, and will remain so in the future.

However, as many people said yesterday, there are a number of exporting countries trying to grasp a comfortable share of the Japanese market. The competition will, no doubt, become keener and tougher, particularly in view of recent overproduction on the global basis.

On the other hand, the Japanese market is extremely demanding and highly dynamic, which, in turn, requires constant innovations on the part of suppliers, both domestic and overseas. We must bear in mind that any conventional goods of ordinary quality can hardly find a market in Japan. Even if they do, they tend to be short lived.

I am fully hopeful that Alberta will meet the challenge and further expand its market in Japan for the second century that is now starting.

Thank you.

Individuals in domestic and international markets — target opportunities

Opportunities from a U.S.A. and Canadian perspective

Dr. John Morris

To say this is a time of change in the food industry is, indeed, an understatement. At the retail end, our markets are changing, our customers are changing. The product mix that's demanded is changing. The nature and degree of service that our customers want is changing. The competition is changing. The distribution system is changing and our technology is changing. In this environment, we must adapt or die.

These changes also bring many opportunities. Not, I must emphasize, opportunities to maintain the status quo, not opportunities to perpetuate yesterday's products, but opportunities for new products, new ideas, marketing innovation and creative approaches to merchandising our products. I would say to you that there are more opportunities in the marketplace now than there ever have been.

This is not a time for disillusionment and despair. This is a time for optimism and hope. Let me say, though, the mass market is declining. The retail market for commodities, as such, is declining. The specialized niche market is growing. The market for value added products and products that provide quality and convenience is a growth market. Witness the rapid growth in gourmet, frozen, prepared dinners. This product that did not exist in the early 1980's is approaching a billion dollar market in the U.S. now. Look at the burgeoning market for prepared salads in our stores. But increasingly, our customers want products with specific and unique characteristics. They want good taste. They want products that are easy to prepare. They want microwavable products. They want single servings. They want products that are convenient. They want products that are easy to procure. They don't want to spend half an hour or two hours shopping. They want products that are ready to eat, and these are but a few of the characteristics they are looking for. I can assure you, the day of one size fits all is gone and gone forever.

The developing specialized market segments represent opportunities for us, and represent opportunities for us in Alberta. The market for basic agricultural products is declining. Beef tonnage continues to drop

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Dr. John Morris is the Senior Vice President, Safeway Stores Inc., Oakland, California and will continue to do so. Butter and cream volumes are down. The demand for low fat milk is up. Sausage, bacon, cured ham, cured picnics, all show market declines. At the same time, fish is up, lean meat is up, poultry is increasing. The market for canned vegetables is declining. Fruits in heavy syrups are down, but fruits in light syrups are growing. Fresh fruits and vegetables are up strongly. We as a company, in the last five years, have gone from 65 items of fruits and vegetables to about 220 now. Lean, fresh and natural are characteristics very much in vogue. Baking ingredients, such as flour, are down, but ready made cookies, especially chocolate chip cookies are growing. Fewer and fewer shoppers are buying commodities out of which meals are prepared. Increasingly, they want the work to have already been done on the product. Regular ice-cream demand is down. Gourmet ice-cream is booming. In some of our markets now, 90% of our ice-cream sales are in the round containers of upscale ice-cream. Snack foods are up. Snack foods represent a $7 billion market in the U.S. It grew 9% in 1984. We anticipate it will grow by the same amount this year. Natural foods are growing. Granola bars alone now account for a $4 hundred million market in the U.S. In-store bakeries showed a 12.3% growth rate for the whole industry in 1984. For in-store delis the figure was 12.7%. Increasingly, the meat is not being bought in the fresh meat counter. It is being bought in the delicatessen. Salad bars are the in thing, so are soup tureens. There is a rapidly growing market for fresh, store-made pizzas.

We, in the retail business are trying to anticipate, interpret, and adapt to all these changes. You, in the other segments, the agricultural industry, have to do the same thing. Recently, the Southland Corporation said the basic convenience store is moving away from groceries and moving towards fast food and financial services. Southland, which is the parent company of Seven Eleven, now sells hot dogs and nachos in 5,500 stores. Many of the stores have automated teller machines. Many of the stores rent video cassettes. They're testing salad bars.

The point I wish to make is that the boundaries between grocery stores, convenience stores and restaurants are becoming more cloudy, less distinct. Well, you might say what does all this mean for Alberta agriculture? I would say this to you. It means many tremendous opportunities, but we have to adapt to the wants of the consumer and the needs of the marketplace. We have to adapt. I can say we have a number of very positive things going for us. The beef and pork grading system in Canada is one of the leading systems in the world. It produces the type of meat the consumers, increasingly, are looking for around the world. It's the system that the U.S. is striving for but hasn't been able to get yet.

The foreigner's image of Canada is very positive. We've learned this in our exporting efforts. They see Canada as a clean country, clean air, clean skies, clean water, very positive, very natural. Our diverse cultural heritage and the products that come from that are a tremendous advantage.

As we are finding in our exporting efforts there are many unique products - perogies, Canadian cheddar, Chinese sausage, cottage rolls, tourtieres, beer, liquor, fish, mineral water, pork butts, spare ribs, bacon, and crumpets, to name but a few.

I believe one of our greatest opportunities is in the area of packaging. Packaging on most Western Canadian products is mediocre, at best. It puts products at a major disadvantage in Canadian markets and is usually a disaster in export markets. We need to spend more money on design, logo and name for our products. We need to make them distinctive. We have to play up the fact that they're Canadian, play to those images that foreign markets have of Canada.

I might add, to you, also, if we are looking at what products we might sell, if we have value added products, we have a lower volume of product and a higher return. In a political environment, such as we have in the agricultural industry in the U.S. and most other countries, if we are selling a value added product, we will be selling lesser quantities at a higher value and I would argue that would reduce the political vulnerability.

Finally, let me reiterate. It's time to de-emphasize commodities and emphasize products. It's time to de-emphasize production and start thinking about marketing. It's time to get away from generic advertising, where I think you waste most of your money, to coordinate a promotion of branded products. It's time to get away from wanting to educate the consumer and time to learn from the marketplace. It's time to end the finger pointing at other members of the distribution chain and we must look for ways to cooperate. It's time to get away from fighting a rear guard action for practises of the past and face up to the realities of the present marketplace.

There are many great opportunities. Witness Lean Cuisine, Mrs. Field's cookies, diet sodas, tortilla chips, gourmet ice-cream, Campbell's Chunky Soups, Pepsi-Cola, Yoplait Yogurt and kiwi fruit, all successes of the 1980's. There are many great opportunities. Let's work together to realize them. I welcome your questions.

Individuals in domestic and international markets — target opportunities

Exporting — how we can do it better

Dr. James Youde

It's my pleasure to be here with you today as part of this distinguished group of speakers and panel. I'll get through my comments as quickly as I can so you can have some more shots at the first two speakers. I want you to know that one of the great experiences I have had during the past seven or eight years has been working with folks from Alberta Agriculture. We have had a good working relationship back and forth. A number of your people spend a lot of time down our way, promoting products and I think that's been very successful.

Someone asked me yesterday, "Are you a competitor of ours, being in the export business in the U.S.?". In some cases we do compete with Alberta exports and I find that to be very high level, high quality competition and something that I admire a lot more than some of our other competitors, but, more importantly, we are extremely important markets for each other. We, in the U.S., sell about 2 billion dollars, we will this year, of food and agricultural products in Canada. As the Minister indicated this morning, you sell something around 300 million dollars in the U.S. and we are your largest market other than for the cereals and grains, so there is no question that we have a lot to benefit by working together, by communicating, by increasing the two way trade as much as we possibly can.

These have been challenging times recently, in agriculture. I don't have to tell you that, hearing the presentations of yesterday and earlier today. There's a lot of stress in our food and agricultural industries. South of the border we certainly have a lot of that. We have our farm credit system that serves over a third of our farmers. It's on the brink of collapse and only a large Federal bail out will solve it. We've got a lot of new competitors in the world agricultural situation. People that we helped learn how to produce wheat are now net exporters. People that you helped learn how to produce canola are net exporters and we can go through a long list of new people that are getting into the act, so to speak. But, mainly, it's in bulk products, which will be part of the pitch that I'll make along with some of the other speakers. So, it's been tough and I

Dr. James Youde is the President of Northwest Economic Associates think that we should be able to agree, now, after what's happened during the past decade, that exports are absolutely critical to the viability and the growth of agriculture, both in Alberta, throughout Canada and in the United States. We have the capacity to produce a lot more than we can consume domestically, unless we down size our industry substantially. I'm not interested in being part of that, so we have to do more, do a better job in export markets.

Yet, in spite of these problems we've had, the strong dollar, the worldwide recession, a lot of other things going on, there have been a lot of successes during the past five years and I want to tell you about a few of our successes just to illustrate that point before I talk about some ways that I think we can do a better job of increasing exports.

One of our most satisfying successes is a program we put together with you folks up here about three years ago. Jim Coughlan and Barry Mehr came down, met with our Board of Directors, said we have this lamb processing plant that's running about 50% of capacity or somewhere around there. We need more lambs at certain times of the year when they're not available locally, to process and sell to Eastern Canada. We said we thought we could help them put together a program. We've done that. There's somewhere, I think, around 30 to 40 thousand lambs over three years that have come up this way as a result of that. They fit in, they've complemented what you folks are doing up here and it's one of the examples, I think, by working together, where its created more jobs and economic activity. It's created demand for your lambs during the seasons when they are available. It's kept the market serviced during those other periods of the year and I think it's a good example of a marketing success.

A few other things that we've been involved in, ice-cream to Malaysia. That sounds like a strange one. Malaysia's a long way from the Western U.S. to ship ice-cream. In fact, when we were putting together a promotion in a supermarket chain in Malaysia and they wanted U.S. creamy style ice-cream, I approached two of the larger factors in the ice-cream industry in the Western U.S. They said no, we're not interested. We can't compete in that market. New Zealand is closer, has lower costs and everything. I finally found a supplier in Utah who said, sure, we'll take a shot at it. They're one of the higher quality, Dryer's type ice-cream. They put together a twenty foot container for the promotion. We shipped it to Singapore, where it got put onto another ship. Between Singapore and Malaysia, the refrigeration unit broke down. I got to Malaysia and about 15% of the ice-cream had melted but we salvaged the rest of it, got it into these stores. It was a tremendous hit. This little company has now sent six containers of ice-cream, since that time to Malaysia and is continuing our program. It's an example of why I don't think you can write anything off. If there's buyer interest and buyer opportunity, we have to take a shot at it.

On alfalfa to Japan, we've taken some new suppliers into Japan that have developed business in selling alfalfa pellets in cubes. Recently, you folks have been a very formidable competitor with the dollar relationships and, frankly, you've taken a lot of that market away from us. It's a case where your marketing people have been very effective, but we're in there scrapping and we're going to get some of that back.

Choice beef to Korea. We took a company that hadn't been in export, to Korea a year ago June, to a food show. During the year after that show, they sold about a million dollars worth of beef into the restaurant trade, in Korea. Unfortunately, as some of you know, more recently, the internal politics in Korea have virtually closed that market down and it's one of the problems we have in a number of markets where we have this type of internal reaction to some increased international trade that we constantly have to deal with.

Slaughter sheep to Mexico, health foods to Japan, last July we did a promotion in twenty department stores health food sections in Japan. These were Western U.S. health foods, very successful, a lot of interest in health food. That's the fastest growing part of the Japanese food market at the present time. I think it's ironic, though, the way that Japan had some very healthy diets, and they've, perhaps, moved more towards our diets and now they're buying health foods. But as John Ward said, you go where the consumer wants to go.

Pecans to Europe. A number of other things. Two weeks ago, we were at the Anuga food show in West Germany and I am pleased to report that we had more interest in U.S. value added products than we've found in an international food show in the last four years. I think the main reason for that is the little bit of softening we've had in the U.S. and Canadian dollar relative to other currencies during the past few months, has put a psychology back in the marketplace that buyers are starting to show some interest. I think we're looking for better times in terms of increased demand, increased interest for a lot of our products from many places. We had buyers from all over the world at that show looking for things like natural soda pop, from Pakistan, Italy and you name it, as well as snack foods, herbal teas, corn nuts, pecans, California Cooler and a number of other products.

Well, how can we do a better job? How can we increase our exports more? I'm going to mention five ways that I think we can do a better job in exporting. When I say we, I'm talking about Alberta, as well as the Western U.S. because we're, basically, in the same business. We have some differences in product, but, generally, these principles apply and some are between the two of us.

My first area is what I refer to as market targeting. The first two speakers have alluded to this. We have to do a better job of adapting our products and services to what the market wants, what the consumer wants. I'll give you a couple of examples of that. We recently were approached by a Japanese company that was looking for a new source of supply for a product that's been in Japan for hundreds of years, called Nikajaga. It means meat and potatoes. It's a stew type product that's consumed mostly in pubs and bars, but they want to move it into the retail sector. We're working with them to tailor product packaging, product specifications to meet that interest. Recently, we've been working with a company called Corn Nuts, out of Oakland, California. Corn Nuts have been around in the U.S. and Canada for 50 years, I guess. Depending on how you define it, maybe it's a snack food, maybe it's a junk food. Is ice-cream a junk food? I think you get into some value judgements of what's a junk food and what isn't. Anyway, when we introduced corn nuts in Japan, the reaction was that they were too hard. Working with a Japanese company, we've developed some technology that's leading to a softer corn nut. That's going to affect Corn Nuts total marketing program across the world. Generally, their product, as they make this change, will be softer. The only losers in this thing will be the dentists who have been fixing teeth off corn nuts, but it's an example of a company whose product adaptation is extremely important and they're getting the job done.

Quality was mentioned. I certainly agree with Mr. Ebihara that we have to emphasize quality. It's our best competitive tool relating to these new competitors that are getting into the exporting game. We have to be a reliable supplier, provide the quantity on a consistent basis. We, in the U.S., have some history to overcome in that area as far as soybeans and wheat and a few other things are concerned. I don't think you folks have quite as much bad history in that area, as we do, but certainly it's a very important one.

The presence, Mr. Ebihara mentioned it, is very important in all the markets. We have to be there, constantly and frequently, in order to convince buyers that we're really interested, on a continuing basis, in their market.

Time frames are much longer in most markets than what they tend to be in this country.

Promotion. We've started a new program we call VAPP (Value Added Products Promotion) where we're helping companies set up a three year program to promote their products. These are branded products in specific export markets. We're using three years because we need at least that long of a commitment on the part of these companies before we're interested in putting some resources into it and basically, the companies get a 50% match on their expenditures for promotion in these countries. The Europeans have been way ahead of us in the U.S. and you folks in Canada in promotion, but I think one of the reasons is that we're fairly new at it, when you look at how long we've been the food exporting business. Prior to 1950, we didn't do very much exporting, and many of these European countries have been doing it for hundreds of years. That's how I console myself when I go to these international food shows and see the pavilions of many of our European competitors as well as other competitors and see the resources that we're putting into that area. It's increasing, but we have a long way to go. Promotion is extremely important. Our importer/customers are requiring more input from us as suppliers all the time in the promotion area..

Price. We need to be in the ball park on price but particularly for the higher value - value added things - price is not as important as these other factors.

My final "P" on my "P" and "Q" here between market targeting is politics. It's a major determinant of the trading rules and it's something that we constantly have to work on to improve the trading climate, and that's my next point that I want to make in terms of something we need to do and that's to improve the trading climate. We need to do as much as we can to remove the trade barriers and irritants that have developed between our two countries. There's been an escalation of border irritants over the last few years, such things as inspection protocols, residue tolerances, settlement of produce shipping disputes and we could talk about the hog problems and the raspberry problems. Most of those don't apply to Alberta, they're to your west or to your east, but they certainly affect you at the same time. There's a new mechanism that's being set up and Barry (Mehr) has been very instrumental in pulling this together, for exchange of information between Canada and the U.S. on these border irritants and trade barriers that is going to help, we hope, to increase the level of understanding and reduce some of those irritants that have been increasing over the last few years. I think, related to that, we have to work together in both Canada and the U.S. in agriculture to do our best to resist some of the protectionist pressures that are going on. I'm convinced that the big loser in a protectionist type trade war is going to be agriculture, for a couple of reasons.

Who are they aimed at? Japan, Korea, Taiwan, at least in the U.S., to a lesser extent, Europe, China is one of them. Those countries, basically, have other alternatives for their food and agricultural supplies. I think we should have taken a object lesson from what happened on textiles a few years ago, when we closed the doors, somewhat, on textile imports from Hong Kong and China and all of a sudden our wheat sales to China went to zero and China has become a net exporter of wheat, in about two years. I think there are many examples like that we could talk of and we have to do our best to promote a freer trading situation, both between our two countries and our other trading partners. That's tough in the current political environment because of the job implications of increased non-agricultural imports from many of these countries. I think a North American common market would be nice. One of the speakers, yesterday, said first we need a Canadian common market, before we start working on a North American common market. So, that's another issue to think about.

In addition to improving the trading climate, I mentioned pursuing the two way trade opportunities. I think there are many of those, like the lamb situation and those trucks aren't going empty back to the U.S. They're hauling feeder cattle, feeder lambs and other products that are useful in the Western U.S. Two way trade opportunities are important. We need to make long term commitments to export, tie it together with other sectors of our economy, such as tourism. I can see a very natural link, I was thinking about this flying over here yesterday, between skiing and tourism in Western Canada and promoting food products to those tourists while they're here.

Finally, and this is not the least important of my points, we need to emphasize the high value specialty products. I agree with the first two speakers that that's where the future lies. The bulk commodity markets are on a decline. A friend of mine recently characterized Japan as becoming a boutique market. People want specialized products, they're not interested in nondescript ship loads of commodities to the same extent that they were ten years ago and we have to get ourselves in a position to respond to those buyer interests. Examples from Alberta with potential are grocery products, processed pork, canola oil, meal, alfalfa products, malt, seed potatoes, livestock genetics. I put all those in a higher value category compared to wheat and feed grains.

So, to sum up, we need a long term commitment to doing a better job in exports, getting into these markets and staying there and I think if we do some of these things I mentioned we can survive and prosper in what is going to be a more competitive global economy. That's where we are now and that's where we're going to continue to be and if we'll make a bigger commitment and use more discipline and more value to our products, we, in the Western U.S. and Canada, can continue to be a very viable part of that system. I'd be pleased to try to answer any questions.

Thank you very much.

Individuals in domestic and international markets — target opportunities

Producer's role in exporting

Walter Paszkowski

First, may I take this opportunity to thank the Minister and the organizers of "Second Century Opportunities For Agriculture" to allow me to participate and be allowed to express my views on a subject I consider vital to the success of our agricultural community.

The producer's role in agricultural product marketing and exporting can and does bring forward a strong and divergent set of views, quite often expressed by very strong emotional feeling. The strongest opinions often are expressed at the non-producer level, those who feel they are designated to be spokesmen for the producers, when it comes time to choose direction as to how, where, when and in what manner agricultural products should be marketed. Producers have often chosen to stay clear of any aspect of marketing or market development. Many adopt the simple formula, we'll grow it and let someone else look after it from there. Quite often these same people will spend countless hours shopping around at the local level to make sure they achieve the best return. Once out of sight it immediately goes out of their mind. I can't help but ask the question would G.M. or John Deere produce a product and then adopt the approach that it is someone else's responsibility to market it? Please don't misunderstand me. I am not suggesting that agricultural producers become marketing agencies. What I am suggesting is that now is the time for producers to become involved.

Canadian farmers have in the past been content to let someone else do all their marketing for them, and by and large it was, and still is, wise to let a professional do the job. World needs and demand change; market opportunities, market methods and consumer needs change with the progress of time and so must established methods of exporting.

Part of that changing role has to be assumed by the producer. Responsible producers must become actively involved in the role of identifying, pursuing, liaising and committing markets, both at home and abroad. The situation at home is not usually as complex as the foreign export of agricultural products, though with some of the political decisions being made in Canada the past few years, such as

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allowing subsidized agricultural products to enter our country as a dumping ground, it appears we may indeed have to become far more attentive to what is happening at home, both in market promotion and development as well as political discussions. I will deal with some of these thoughts a little later.

The first step of producer involvement should be in the area of identifying markets. This area has in the past been handled with good success by Federal and Provincial market development agencies together with private and coop agencies. Though this has generally worked well, it could and must be improved, i.e. the political process of today has given direction that the Canadian government will do no business with Taiwan. Taiwan has a small land based, largely populated country, without the need of export credit. During these times when virtually all governments of the world are setting policies to become self sufficient in food production, there are not too many Taiwans around.

We can ill afford to pass up this opportunity. Producers must be present to recognize these opportunities and must lobby to see that our needs are met. Skilfull negotiating should allow us to retain the dwindling Chinese market plus assume that of the growing potential of the Taiwanese. After all, what have the Taiwanese done politically to hurt our country.

By properly identifying markets we also progress the development of structure necessary to fulfill markets, i.e. port facilities, etc. Here I would like to take the opportunity of commending the Alberta Government for the foresight they have shown in the development of facilities such as Prince Rupert and A.T.L. and I think it is only fair to say that the Market Development group of the Alberta Department of Agriculture is without a doubt one of the strongest of its kind throughout the world and certainly one of the strengths of our Alberta Agriculture Department.

Part of the process of identifying markets is to advise the producer at home of the potentials and as the markets develop the responsibility to produce to satisfy the need of the market. There is a philosopher that suggests it is wise to keep the customer guessing. Keep him in the dark. This may be a strategy that will work for countries merely picking up shortfall, however, for those countries who rely almost in total on imported food supplies this is suicidal. This merely invites them to expand their import base. Having had some first hand experience with the development of the canola market, a market we have at times had difficulty in fulfilling, the worst thing we can do is not being able to guarantee supply. If we are concerned about maintaining competitive pricing the proper way is to diversify the market. Have the countries compete amongst each other. The surest way to lose a market is to create uncertainty about ability to supply, or quality.

The producer's role in pursuing, liaison and committing markets should also be of a significant nature. Again referring to the canola industry, the one which I am most familiar with. The producer's presence is vital, for two primary reasons. First, to explain to the importing countries what the producer's needs are or why shortfalls occur and then to explain to the producers at home what is happening on the export market, why they are making such demands and are the demands that are being made reasonable; then establishing if these needs can be fulfilled. Only the producer is able to equate the feasibility of meeting the production standards of many of these demands.

Canadian producers have no doubt lost millions of dollars in the past few years because we have not moved with the world marketplace in the development of the new wheat varieties. When 75% of the total wheat consumed is that of a quality which we can grow but choose not to, I have to question judgement of those making that decision. Now we are trying to recoup and recover but only after producers took the issue into their own hands.

While I am on the subject, some of our agricultural regulatory agencies should have added producer input. Some of the recent decisions by groups such as the Canadian Grain Commission show a complete lack of producer dimension.

Producers do indeed have a responsibility to become involved in marketing and market development. The effort and the commitment will vary from producer to producer. It is imperative that each producer should at least be able to recognize the needs of the international marketplace, what the options are and what will place the Canadian producers and eventually the exporter in a better position to consummate a transaction.

Such items as quality, continuity of supply, ability to service the customer and even (heaven forbid the thought) a more competitive price can help establish or maintain a market that could go to a competitor.

Since the majority of producers choose not to become actively involved in actual export transactions they must realize that close cooperation with exporters is imperative. Working together as a team can help make it easier for everyone involved.

Producer groups play a very important role in the market development process. Foreign customers are much more impressed when commodity groups bring forward their views. This indicates consensus of opinion. Through these groups policies can be thrashed out so we don't have the divergent views being presented to a startled customer who finds it difficult to understand why we at home cannot agree. To divide and destroy is a ploy a good negotiating import team can use to their advantage. Belonging to and actively participating in a commodity group that represents the commodities we produce provides us with good market insight, provides the exporter the information to make his efforts easier and generally makes a more confident customer.

World markets and world demands, and consequently marketing methods change and to be successful we must adjust with these changes. We must not follow too far behind or our products are no longer in demand.

We are presently involved in much discussion regarding free trade

In some circles there is trepidation to even consider such a drastic measure, but let us look at what has happened in the European Common Market; a very sophisticated and well structured method of European trade. We hear that it is indeed having some present day problems, but look at the tremendous success this program has had with the movement and production of agricultural products during the past two decades upon the participating nations agricultural community. Though it may have now outlived its usefulness, this just shows the point I am trying to make - marketing methods must be flexible and be prepared to change as change becomes necessary. It appears the Europeans were able to recognize the need for free movement of agricultural products across international borders long before we were.

What does this have to do with the topic "producer's role in exporting?" A great deal. Never has a marketing program with closer involvement and liaison with producers been introduced during our generation. Originally introduced as a production incentive program; it was indeed most successful, so much so that today it has provided challenges to the European market system, the tentacles of which reach out across the Atlantic with a negative impact upon our North American producers. It would most certainly appear that free trade between ourselves and the U.S.A. has some merit and potential for most of our agricultural products.

To be successful, however, one will need the close liaison, input, direction, and understanding from the producers themselves or, in other words, producer involvement.

Permit me if you will to refer to some of the producer involvement within the canola industry's marketing program. I refer to this group's activities because of some obvious success the industry has had at moving product into export at a premium price.

A producer is involved in the annual Japan Canadian Canola Trade consultations. Foreign trade groups often tour local producer farms to see first hand the production of the product.

Producer representatives of the industry have often gone abroad to study other countries marketing and production methods.

Producer representatives have participated in discussions involving supply, demand and quality as well as other concerns of major importers.

This past year, a large delegation of producers travelled to the Orient to liaise with our largest customer. Papers were presented by both sides and a better understanding prevailed. Interestingly, the producers paid their own way and found the experience most rewarding.

I had earlier mentioned a concern regarding our marketing policies at home. Allowing cheap government subsidized Irish beef into Canada has to be considered a prime example of being undermined on the home front. Here again closer communication could help avoid such issues.

The Canadian agriculture producer is quite prepared to battle any competition head to head on an equal footing. This is not what can generally be considered equality, however.

To briefly summarize my thoughts, yes the producer does have a definite role in today's marketing of the product he produces. The role is primarily that of a consulting or supportive nature. Few producers today have the expertise or the time to become involved in direct price negotiation and this should best be done by the experts or brokers.

I do, however, see a changing role of producer's activity within the export of our products. I see a greater activity, more involvement, and in some cases, a more direct role such as with specialty products where particular expertise is required. The producer may indeed wish to deal on a more direct basis.

I see the producer more actively determining what type of products should be placed into the marketplace. This can only be achieved, however, through a better combination of research and development which would allow us to produce better quality product at competitive prices. We seem to be coming close with our 3 M wheat where protein levels are coming close to that of our hard red spring wheat.

The producer must stay in close contact not only with scientists but with our government marketing and policy setting people. We must advise those negotiating at GATT of our needs. We must work towards the establishment of export loans and finances and most important of all, we must be able to produce competitive quality and consistent supply.

A successful export program is a team effort and only as good as the weakest link of that team.

Let us all work together and put the proper emphasis where it is needed and I am sure we will be able to meet the difficult competitive challenges that seem to be ahead of us.

Thank you.

Land, soil and water resources — the Alberta advantage

Provincial overview

A.O. Olson

Good Afternoon

Mr. Chairman, members of this afternoon's panel, ladies and gentlemen.

In order to proceed through the topic this afternoon, I've the responsibility of overviewing the resource, the planning processes for land and water utilization, outlining briefly the types of programs that are in place and outlining some of the issues we face as Albertans. My colleagues on the panel will be covering, at considerably more depth, the issues of water resources, land and northern agricultural development and soil conservation.

Introduction

Over 100 years ago, surveyors such as Captain Palliser raised serious questions regarding the advisability of opening much of Alberta for agriculture. We're fortunate that our forefathers didn't listen because if they had, we wouldn't be here!

Land, soil and water resources are long term resources. The public and ourselves persist in calling these resources renewable, perhaps in an attempt to contrast with the rapid depletion of our energy reserves. Land, soil and water are no more renewable than our coal and petroleum resources if they aren't managed properly.

Much of my presentation will be based on the preliminary findings of the Agricultural Land Base Study, a study being carried out by the Departments of Agriculture, Energy and Natural Resources, Environment, Municipal Affairs and Transportation. The study is focussed on enhancing our understanding of how Alberta's land and water resources might be utilized to either expand or intensify our agricultural production.

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Resources

Alberta's agricultural land base, yields and crop production have all increased since the province was first settled. Cultivated lands have increased by about 1 % annually for the past 25 years, whereas productivity has increased about 3 % per year during the same period. Improved farm technology and increased mechanization now allow a single farmer to farm more acres. The amalgamation of smaller farms and expansion onto new lands have also resulted in larger farms. In 1931, Alberta's farm population was 375,000 or 91 % of the total provincial population, compared with 195,000 or 9 % of the 1981 total. Agricultural growth is continuing and from a historical perspective, it is likely that additional lands will be required for both crops and livestock.

I recognize that the potential for land expansion and intensification depends entirely on our markets and hence the moves to reduce interprovincial balkanization and to encourage free trade with our major trading partners are moves in the right direction.

We are fortunate in our abundance and the reality that the resources of land and water are almost entirely the prerogative of our provincial government. There are extensive areas of land suitable for agriculture in Alberta. The agricultural land base expanded from 400,000 acres in 1905 to 29.3 million by 1921 and 50 million acres by 1981. One third of Alberta's total land area is now devoted to agricultural production. Of the 50 million acres of farmland, approximately 30 million are improved and used primarily for production of field crops. The 20 million acres of unimproved farmlands are primarily used for grazing.

On average, Alberta's primary agricultural industry is equally balanced between crop and livestock production (farm cash receipts). Alberta presently contributes 20 % of Canada's total agricultural production and maintains the largest livestock inventory of any province.

Private investment in agriculture is estimated at over $33 billion with 80% of this capital tied up in land and buildings. Clearly it is primarily private investment and initiative that has made our land and water resources so agriculturally productive.

We've utilized the benefits that new technologies generated within Alberta and across the world have provided. The pool of technology available to us continues to grow, and given the advances in biotechnology and microelectronics, will likely have even more impact than that experienced over the past 25 years. However, in my comments, I've chosen to remain relatively silent on the impact of technology and focus on our physical resources.

We have the potential for considerable increase in our agricultural productive capacity through expanding and intensifying the use of our land base. The Agricultural Land Base Study suggests that there are some 9 million acres of forested lands and 22 million acres of land currently in some form of agricultural use that could have their agricultural productivity significantly increased through more intensive management. The study also suggests that there is the potential to increase the value of our agricultural production by 70% if all of these opportunities were seized upon and markets were available. While projections for growth are difficult to make due to competing land uses, soil deterioration and natural limitations, we've the people, the technology, the infrastructure and fortunately, the financial capability to take advantage of many of these opportunities. I shall return to a more complete description of the opportunities that exist for intensifying and expanding our agricultural land base at the end of my presentation.

We have some limitations. Obviously, climate continues to be a primary limitation. Our soils reflect the impact of climate. Much of our land is best suited to grass production, hence our comparative advantages in cow-calf and feeder cattle production.

Water supply is another limitation. A corollary to Murphy's law seems to apply to water around the world. Water is never where you need it. We're fortunate that a significant portion of our waters arise in watersheds in Alberta in that we've first use of our share. About 80% of Alberta's demand is in the south half of the province where only 13 % of our water is found. Agriculture is the major user, although industry and urban use are growing rapidly.

The planning process

Land and water decisions affect every Albertan, thus it should come as no surprise that almost every organization in the province and essentially every agency of Government, whether Provincial, municipal or Federal has some input to decisions. Several governmental agencies at the Provincial and municipal level have programs which influence the development of Alberta's land and water resources. In addition, many of these agencies or departments are directly involved in the management of publicly owned land and water resources.

The key planning processes affecting private land are those functions carried out under the auspices of the Planning Act. The Alberta Planning Board, the 10 Regional Planning Commissions and local municipal governments are the agencies directly charged with responsibility for implementing plans. The substantive planning is carried out at the local level. The municipal general plans and land use bylaws are the key instruments in determining land use on private land.

Public land is somewhat different because government not only owns but is responsible for the management of the land through the Public Lands Act, the Special Areas Act and the Tax Recovery Act. A consultative process called Integrated Resource Management Planning involving 6 departments of government, municipalities, public interest groups and the public at large has been put in place to implement planning for public lands. The Department of Energy and Natural Resources has the primary mandate for allocating public lands and thus leads the process. Six Departments are directly involved (ENR, Parks and Recreation, Agriculture, Municipal Affairs, Environment and Tourism) but at least as many others maintain a watching interest. In my opinion, the Integrated Resource Management process is working fairly well in dealing with the allocation of public lands and is a significant improvement over earlier processes.

Planning land use depends on knowledge. We're fortunate that we've a reasonable research, survey and informational data base. While we're weak on detailed soil inventory information and the bringing together of land related information into one database, we have made moves in these directions that promise success.

The planning and allocation of our water resources is at least as complex an issue as the allocation of land. Water is essential to all human activity and a plentiful supply of good quality water, widely distributed, is a fundamental requirement for balanced economic growth and continued population growth. It knows no boundaries; consequently, water management demands interprovincial and international cooperation.

Water is a different type of resource than land - it's difficult to capture and control, it's sensitive to climatic fluctuations and it's often not where you want it. It's the catalytic agent that makes agriculture and industry grow. For those reasons, its management is vested in the Department of Environment via the Water Resources Act. Our provincial policy for water management is based on multiple use and the concept of protection of prior rights. Water use decisions are also consultative involving many of the same agencies that are involved in land related decisions.

Within the agricultural context, Alberta Agriculture is involved on planning teams on water resource issues. For irrigation, the Irrigation Districts and the Alberta Irrigation Council are directly involved in planning for the 13 large organized projects. Alberta Agriculture is also involved in planning for new irrigation development outside these districts.

As I mentioned earlier, the processes of land and water management involves many different users and interests. As a result, these processes are under continual review. At this point, the Environment Council of Alberta's report on Maintaining and Expanding the Agricultural Land Base is under study by Government. The Water Resource Commission's report on the allocation of water in the South Saskatchewan River Basin is being finalized. We've utilized the information inherent in the PFRA report relating to land and soil conservation in our program development, we've had significant, if somewhat rushed, input from the Senate hearings chaired by Senator Sparrow on the state of our agricultural land base, the Northern Alberta Development Council's report relating to economic development in the north is on the table and we've just received the Bentley/Leskiw report on soil conservation.

The process is obviously continuing. Perhaps as a result of the myriad of inputs, the nature of changes that relate to use of our land and water resources haven't been as distinguishable as some would like. On the other hand, the need for long term, coherent and reasoned planning for land and water resources is perhaps better served by gradual change.

Current government programs

Because land and water resource allocation and management are so crucial as the underpinning of our economy, Government has developed a wide range of programs.

To a newcomer and even to some of us that have been around for a while, the wide range of programs can seem confusing. However, the linkages between the various departments, the consultative processes, are well in place and operating.

I've broken the programs into 6 basic types. These include planning and inventory programs, water management programs, public land management programs, transportation infrastructure programs, financial support programs and technical services. While recognizing the potential for increasing agricultural production through the development of new technology, I've not included agricultural research and the transfer mechanisms for technology.

I've chosen to not dwell on the range of programs aimed at federal lands, including Indian Reserves.

Planning and inventory programs

These include river basin and project planning for water management (AE), irrigation project planning (AA), irrigation land classification (AA), resource analysis and planning services (ENR), integrated resource planning (ENR), climate inventory program (ENR), forage inventory program (ENR), ecological land classification (ENR) and soil survey (ARC and CDA).

Water management programs

The following programs are administered by Alberta Environment and include irrigation headworks and main irrigation system improvement, major water management programs, operation and maintenance of irrigation headworks and systems, water rights licensing for both consumptive and non-consumptive use, and drainage districts administration.

Public land management programs

Energy and Natural Resources provides the following programs: grazing reserve development, public land disposition, range management, Buck for Wildlife program, accelerated land sales and tax recovery sales programs. Municipal Affairs provide Metis Settlement programs as well.

Transportation infrastructure programs

Alberta Transportation provides a range of programs that very directly impact the nature and direction of agricultural development. These include the general transportation, construction and maintenance programs within rural Alberta, as well as specific programs dealing with roads to new lands, and irrigation bridges.

Financial support programs

There are two basic types of financial support programs. The first deals with grants and cost sharing, the second with loans.

The grant and cost sharing programs include the irrigation rehabilitation and expansion program (AA), the cost shared water resource management projects (better known as Position Paper #5 projects) (AE), Rural Water Development program (PFRA), the Northwest Alberta erosion control program (AE), range improvement assistance program (ENR), Agricultural lime freight assistance program (AA), the Agricultural Development Corporation's range and soil improvement interest rebate program, the farmland development and reclamation program (AA), the soil conservation area program (AA), contruction of dams and dugouts programs involving Municipal Affairs, AA and PFRA, and the regrassing program in the Special Areas.

Loan programs include the Agricultural Development Corporation's beginning farmer loan program, direct loan program, farm development loan guarantees and specific guaranteed farm loan program. Farm Credit Corporation also provide a range of long term loans and mortgage credit.

Technical services

Technical services relating to land, soil and water issues are provided by Alberta Agriculture's Irrigation Branch, Conservation and Development Branch and Drainage Branch. Similarly, Alberta Environment provides programs relating to farm surface water management, inspection services related to surface water problems and rural water development.

PFRA provides a range of services related to soil conservation, dugout development and other measures of value in water conservation. The Department of Utilities and Telephones has recently announced a program to assist producers provide a surer supply of water for themselves.

As I said earlier, there is a wide range of programs, involving a public expenditure of about $260 million per year, not counting the Agricultural Development Corporation's loans nor Alberta Transportation's infrastucture program (about $600 million). Co-ordination between agencies is obviously a continuing responsibility as is the need for input and advice to ensure these programs continue to respond to real needs.

Global issues

There are a number of more general issues facing future efforts in land, soil and water management. We will be touching on these during the course of the conference; however I did want to reference them.

We use our land to produce food and agricultural products and thus are very dependent on markets for the revenues necessary for continued production and growth. Agriculture in Alberta has been shaped by the resources we've available. The varied soil, water and climatic conditions, the abundance of rangeland, the conditions conducive to wheat, barley, forage and canola production, the availability of irrigation have combined to produce a diversified agriculture with an export orientation. This fact is often overlooked by policy makers in central Canada who tend to look on western Canada as homogeneous and tends to explain why Canadian agricultural policy appears to have been designed for everybody but Alberta. Our continued growth thus depends on encouraging change at a national level, change that will support our need to be competitive in world and North American markets in a free trade context.

Canada's agriculture is balkanizing. I believe that the bulk of responsibility follows from the Canadian tendency to reduce disadvantages rather than to build on natural advantages, which of course leads to artificial production, movement away from an export orientation, supply management, trade irritations and an increasing dependence on government. We've got to enhance the opportunity to encourage the strong, not protect the weak.

The increased dependence on government is destabilizing, with all the tendencies of a roller coaster, and always ending up where you started. The British Columbia study which attempted to define what portion of farmer's income came from government demonstrates first the level of involvement and perhaps more critically, supports my concern regarding balkanization.

Finally, I believe we have to be concerned about the aversion to change. I hear often enough that Alberta's population is "big enough - we've lost the freedom and independence we once had". Unfortunately, I was hearing this when Alberta only had about 800,000 people. Perhaps the only way to satisfy some is for everyone to move out. We have to change, to grow, in order to ensure we've the opportunities our kids deserve.

Specific issues

I'd like to wrap up my presentation with a number of more specific issues we're facing as Albertans.

A. Soil and water conservation

The first is the overall question of soil and on-farm water conservation. Soil erosion by wind and water is a continuing and persistent problem on agricultural lands in Alberta. It's the result of both climatic and soil management factors; however the management practises adopted by farmers cause most of the erosion that threatens productivity. In 1985, about 1 million acres were affected by wind erosion. If we hadn't had a wet September, the minimal amount of trash and cover left on our fields as a result of the poor crops caused by two years of drought might have led to 5 times as much wind erosion, primarily in the south third of Alberta.

Water erosion affects northwestern Alberta and more specifically, the Peace region, with major losses of topsoil that not only reduce agricultural productivity but result in siltation of our lakes and rivers to the detriment of many other users.

Salinity affects about 2.2 million acres of dryland soils and about 0.25 million acres of irrigated soils. In some places, salinity is spreading at a rate of 10% per year. While much of the problem rests on the manner in which our soils were developed through time by glaciation, summerfallow and lack of seepage control practises contribute to the problem.

The continued degradation of farmland through erosion and salinity has brought soil conservation to the forefront of agricultural issues, but the answers aren't easy in that many will require changes in our farm management practises while others will necessitate adjustments in Canadian Wheat Board quota practises, marketing thrusts and incentives to production.

B. Land expansion and intensification opportunities

The second issue relates to what Alberta's opportunities are for further agricultural land expansion and intensification. The Agricultural Land Base Study has identified 11 primary options that are available. Each of these options has costs to the landowner, the Province and to our society, thus a comparison is necessary prior to choosing that optimum combination of options.

The options include:

1. *Expansion into green area lands*

The Green Area, which covers over half of the province, consists of non-settled, forested, public lands. Unimproved grazing is the single agricultural use allowed.

Lands considered suitable for annual field crops (CLI class 1-4) are periodically withdrawn from the Green Area for agricultural development. In recent years, an average of 20,000 acres has been withdrawn annually, with most of the expansion occurring along the existing Green Area boundary in the Peace River region.

Approximately 9 million acres of land in the Green Area are considered suitable for agricultural crop production. Almost all is classed as CLI class 4, that is, as lower capability lands for crop production. Fringe development of such lands is an ongoing process. Smaller block development has some economic value in that servicing costs are reduced. Very large blocks appear to be economically disruptive due to the very high infrastructure costs for roads, power, schools and other services.

On farm economic analysis shows high initial investment costs with larger farms (1200 acres) being more feasible than smaller farms.

There are, of course, some myths affecting development. These include frost limiting production, whereas reality is that frost limits the choice of crops; that crop yields are lower, which just isn't true; and that farming in the north just isn't viable, which again isn't true. While we must recognize the value of off-farm employment, the direction we're going appears to favour continued fringe development and some small block development as fringe opportunities decline.

2. *Irrigation expansion*

Most irrigated lands are located in the semi-arid regions of south and south central Alberta.

In 1983, a total of 1.1 million acres were serviced for irrigation. A further 100,000 acres are irrigated under private projects.

While a total of 8.9 million acres of land have fair to good physical capability for irrigation, the maximum irrigation expansion possible using the waters within the South Saskatchewan River Basin is an additional 1.1 million acres illustrating the effect that water constraints have on the potential for irrigation expansion in this province. Our current estimates of the total cost of works that would be required for this maximum scenario are in the order of $5 billion.

3. *Deep plowing solonetzic soils*

Solonetzic soils are characterized by a tough impermeable sodium affected hard pan which severely restricts root and water penetration.

Deep Plowing is a soil mixing process which physically breaks up this hard pan layer and brings up calcium from lower levels. Deep plowing should be a one-time treatment.

Of the 10.7 million acres of solonetzic soils in Alberta, it is estimated that 2.2 million acres may respond to deep plowing. These 2.2 million acres are evenly distributed among the black, thin black, dark brown, and brown soils.

4. *Liming acid soils*

The productivity of soils with a pH less than 6.0 is severely reduced for many crops because of reduced nutrient availability. Lime can be applied to neutralize the acidity. An initial application of 2 to 3 tons of lime per acre with a 1 ton repeat every 10 years corrects this problem.

70% of all acid soils in Western Canada are found in Alberta - 4.4 million acres, of which 2.6 million acres would benefit from liming.

5. *Summerfallow reduction*

Reducing summerfallow has become very controversial after the past drought seasons. However, we believe through proper management that our summerfallow acreage can be reduced to under 4 million acres, down from the 4.7 million acres in 1984.

6. *Flood control*

Preventing or reducing the frequency and severity of flooding increases average yields, allows the farmer to switch to the production of higher valued crops and allows cultivation of currently non-productive land. The amount of land recoverable from such flooding is minimal with attendent costs that appear excessive.

7. *Drainage*

The word "drainage" means different things depending where the drainage problem is located in the province. While there are existing programs supporting both on-farm water management and drainage related activities in both Agriculture and Environment, a clear definition of the problem across the province hasn't been available. For that reason, the Alberta Water Resources Commission has supported an inventory of Alberta's drainage requirements. The analysis has respected the potential impact on our river and lake systems. It assumes that all drainage within a particular basin would be planned as a unit and that there would be active farmer participation in the drainage works. Options such as on-farm water consolidation, stock watering and irrigation are being considered. As the study won't be complete until early in the new year, I can't provide estimates of costs or benefits. There are up to 10 million acres of wetlands within the agricultural area of the province. We have yet to estimate either how much land would actually be made more productive or estimate the costs and impacts of carrying out such a drainage program.

8. *Prairie and woodland range improvement*

Range improvement allows ranchers to increase their production without expanding their grazing land base. It is estimated that 1 million acres of prairie range and 0.4 million acres of bushland range would benefit from cultivation and the introduction of tame grasses.

9. *Range conversion*

It has been estimated that there are up to 3.5 million acres of rangeland in Alberta that could be more productively used for crop production.

10. *Woodland conversion*

It has been estimated that up to 7 million acres of bushland within existing farming areas could be brought into crop production.

11. *Reclamation of salinized lands*

Soil salinity is a major concern, particularly in south and east central Alberta. While saline seeps naturally occur in parts of Alberta, man's activities have aggravated the problem through summerfallow, snow and water accumulation, irrigation, annual cropping and deforestation as well as overgrazing. At present, about 500,000 acres are affected by saline seeps. This acreage is expanding at about 10% per year. The potential for salinity affected acreage appears to be somewhat over 3 million acres.

A number of management practises can be applied to control saline seepage, including prevention of the formation and deep percolation of excess moisture in the recharge area through recropping and growing of deep rooted perennial crops, surface drainage, use of salt tolerant crops, use of irrigation and subsurface drainage to leach salts out of the rooting zone and lining of irrigation canals.

To summarize, clearly not all of these opportunities for expanding and intensifying the use of our agricultural land base are likely to ever be realized. The point I'm making is that there is considerable potential to increase agricultural production through the expansion and intensification of our land base.

C. Sale of public land

I would note that the Tax Recovery Land Sales Program administered by the Special Areas Board and similar programs in the MD of Cypress and the County of Forty Mile are increasing the ability of producers to secure their land base. Similarily, the recently announced program of Energy and Natural Resources provides for the sale of grazing leased lands which are not environmentally sensitive to the leasee. Energy and Natural Resources also have their Accelerated Land Sales program which is increasing the rate at which new land is being made available for agricultural development.

D. Conversion to non-agricultural uses

a) *Urban/industrial*

We have concerns about the long term security of the agricultural land base. From 1976 to 1980 a total of approximately 400,000 acres were removed and 400,000 acres were added to the land base. However, the land base experienced a **net loss** of 90,900 acres of higher capability CLI class 1-3 lands, while making a **net gain** of 85,000 acres of lower capability CLI class 4-6 lands.

Ninety-five per cent of the additions came from various public land dispositions, whereas the primary removals were for non-agricultural subdivision (38%), oil & gas wells (26%) and urban annexations (22%).

From 1976-1980, 139,800 acres were removed from the land base for non-agricultural subdivisions; 68.5% of this land involved CLI classes 1-4. In the same time period 90,900 acres were lost for urban annexation; 85.4% involved CLI class 1-4 lands.

Subdivision for country residences (part of non-agricultural subdivision category) has the greatest impact on the land base.

From 1976 - 1980, 21,520 acres were removed for single parcel country residences and 74,251 acres were utliized for multi-parcel country residences.

There is a need to monitor these ongoing changes in the agricultural land base to ensure that our land base is not eroded over time by non-agricultural development. We also must recognize that industry and our urban centres need to grow. Where this growth is directed becomes the key issue.

b) *Wildlife habitat*

Wildlife habitat is said to suffer from increased agricultural, industrial and urban development. I disagree. The types of wildlife change rather than net populations of wild game.

Agriculture has, to a large extent, become the custodian of much of our wildlife. Most of the farmers I've talked to are interested in retaining habitat and wild game numbers as long as they're not faced with the problems hunters create and are compensated for damage caused by the Queen's livestock.

Regardless, there are a number of initiatives that have the potential to reduce our ability to either expand or intensify our agricultural productivity.

> North American Waterfowl Management (NAWMP) - A 15 year, billion dollar international plan to rescue North America's dwindling wild duck population through preservation and enhancement of Canadian prairie wetlands. The program intends to encourage landowners to conserve waterfowl habitat through incentives ($1 billion). Program calls for the addition of 1.6 million acres of **Canadian prairie** wetlands to the inventory of North American waterfowl habitat. Alberta is the largest single breeding ground for North America's duck population. Better compensation for crop damage is also suggested.
>
> Wetlands for Tomorrow Program - a 10 year **agreement** between **Alberta Fish and Wildlife** and **Ducks Unlimited** to upgrade 20 Alberta lakes and marshes into permanent, controlled-level breeding grounds for waterfowl. These 20 key wetlands range in size from a few hundred to many thousands of acres and are found throughout the province. Crown land will be used when available, private lands may also be purchased as required. The wetlands are expected to add 885,000 acres of Crown land to **Alberta's** inventory of improved waterfowl habitat.

E. Intensive livestock options

A number of rural municipalities in Alberta face the very real possibility that landowners within their boundaries will not be able to develop new or expanded intensive livestock operations such as feedlots, piggeries or poultry operations due to complaints from adjacent landowners and the regulatory structure of Government. We support the Environment Council of Alberta's recommendation that siting of such facilities is a land use decision that should be made by local governments and have suggested that isolation distances be removed from the Health regulations because the issue is one of aesthetics and nuisance rather than health.

F. Potable groundwater

We've seen the development of a significant competition for our groundwater resources in some areas of the province. Our oil industry needs the water to enhance oil recovery, while at the same time, rural Alberta requires such supplies for domestic use.

As with any problem of resource allocation, there are differences in perception that have resulted in the issue becoming excessively polarized.

In areas of short groundwater supply (central and north western Alberta), there is an impact on oil development, particularly by the smaller oil companies that can't afford the costs inherent in major pipelines. At the same time, farmers are very wary of losing their groundwater supplies, which in many cases are the only source of viability for their operation.

I'm advised that the Department of Environment is currently reviewing the water licensing procedures used for groundwater allocation and understand that further emphasis on preservation of groundwater for domestic use is under active consideration.

G. Climate change

It's hard not to accept some of the suggestions that we're entering a period of dramatic climatic change, given the weather patterns over the past two years. If the climatologists are correct, man's activities have had a major impact on the world's climate through industrialization and the use of fossil fuels, with the net result that atmospheric carbon dioxide levels will continue to increase to a new steady state somewhere in the next century. The increase in carbon dioxide levels means that our atmosphere absorbs more of the heat from the sun, hence higher temperatures.

The computer models that have been developed aren't at the level of sophistication that allows much of a peek at what Alberta will face, however there are indications that we can expect southern Alberta to be somewhat warmer and northern Alberta considerably warmer. Whether these changes will result in changes in rainfall aren't clear, but the suggested temperature changes in the Peace River translate into 20 to 30 additional growing days.

If we accept these projections, we've a continuing responsibility to look at where we encourage development and the nature of that development. I'd feel much more comfortable with the climate change projections if I could trust the short term forecasts we're getting right now.

Conclusion

I've attempted to provide you with a very brief overview of activities and issues, to give you some idea of what's in place and what we're facing. Obviously, both the landowner and government have much at stake in terms of defining what direction we should take.

The issues aren't simple and they don't have clear cut solutions. They range from the problems we're facing in terms of soil and water conservation, to the opportunities facing us for agricultural land expansion and intensification, the loss of agricultural lands to other uses, our ability to intensify our livestock operations, the availability of water supplies to the potential for climatic change.

Thank you for the opportunity. I'll be looking forward to the other presentations and the discussion.

Land, soil and water resources — the Alberta advantage

Water resources

By Henry Kroeger, MLA

Thank you Dallas. Mr. Chairman, Ladies and Gentlemen.

Before I say very much, I would like to know who you are. How many of you are or have been practicing farmers? Oh good. I feel better, I was afraid of too many university professors and academics.

You may be entitled to my opinion as to why I'm here. I don't have some of the fancy things that some of your speakers have like degrees and scrolls that say wonderful things about them. I went to a different kind of a school. I want to tell you about that and that may help clarify for you why I agreed to be here. My schooling is an entirely different one than the academic kind. I went to a college that lasted a long time but I started from the vantage point of not knowing anything about Edmonton, Alberta or even Canada. Communication wasn't great but I heard about Canada on the other side of the world. I heard and remembered very interesting things and at the age of nine in 1926, I arrived in Alberta.

Over in that part of the world they don't have farms as you know them. They live in a town or a village or a city and the agricultural land is around it but they don't live on farms. I went back there this summer to spend a couple of weeks and to have a look 59 years later. The Federal Minister of Agriculture for the Soviet Union made it clear that it was a real hardship that our peasants had to live on these isolated farms. They don't do that, they have them in central areas. I found that very interesting.

Starting then in 1926, when my schooling started on this side of the water, I saw my first farm and sure enough, here are these peasants living out in the wilderness miles from anywhere. I started walking not three blocks but four miles through a bunch of grassland to arrive in a school where the teacher couldn't talk to me and I couldn't talk to the teacher. I was the biggest dummy in the school because everybody else could talk and that was a great educational base for me to work from.

From then on I've been exposed to farming and that covers quite a span. The twenties with mouldboard plows, the thirties when they invented these new tiller discs with 26 inch blades and all of the associated problems, the thirties when our part of the country tried to

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Henry Kroeger, MLA, Chairman, Alberta Water Resources Commission blow away. Those of you from Manning and so on, I guess, are fugitives from Saskatchewan and southern Alberta. I don't think anybody was ever born up there, were they? They all came from somewhere else even though they profess to be northerners now. They've forgotten their roots a bit.

Through the thirties we had to learn to live without water. I suppose, Mr. Chairman, that's why I wound up on this Water Resources Commission. I learned what that meant. I learned what five bucks a month meant through the thirties, working on one of your farms. The government paid the farmer five bucks to keep me there to let me work. I didn't get anything and that was a good education base. Then we moved through the forties with the wide one-ways, with the smaller discs, then we moved into the fifties and sixties with hoe drills and new methods. Machines kept getting bigger and on into the seventies. Dr. Olson mentioned the changes in the views of how you use land, to summerfallow or not summerfallow and that's a big story of its own.

So I went all through that but in the early forties I decided to listen to a gold miner from the Yukon who told me as a kid, "whatever you do, don't ever go farming, it's the worst thing anybody ever contemplated. Even preaching has it beat." I went farming but in the early forties I decided that was a little tough so I would get an easy business. I went into the farm equipment business where I could sell equipment to you and make lots of money and let the world go by and that's when my education really started in many directions. I discovered that I really didn't sell you equipment. You sold me used equipment and you graciously took the new stuff and paid a little bit of difference. And you taught me, notwithstanding the sales pitch that you made, when I got this stuff, about how good it was and that it had always been in the shed and greased and serviced regularly.

When it arrived on my lot in rows, the neighbours walked by and said "Geez, what did you take that thing for? You know I saw that go down the field one day with a cloud of steam going up over it, and the engine's about burned out." So I learned about the used equipment business from you because you wouldn't buy the stuff. I choked on it. What I had to learn about agriculture was that if I wanted to be in the business of selling equipment to you, I had to learn what it does and why you should buy it. It wasn't just a matter of somebody walking in and saying "I'd like to buy that thing." He wanted to talk about what it would do. Now from a supplier point of view, the company used to say to us, "sell the tractor and then the farmer will buy everything else that goes behind it. He likes the same color, he likes the familiarity with the dealership, with the company and so on."

You taught me that the tractor really didn't make a lot of difference, it was what happened behind it that became important and that's true because it's only a mode of motion. What happens behind there is what does the job that you want it to do. I had to learn that from you.

If you don't like some of the things I'm going to say to you, look at yourselves because you taught me. That's where I got my ideas. So I want to talk for a few minutes, Mr. Chairman, about water management because, I guess, that's partly what I'm supposed to talk about. But you can't talk about water management without talking about land management. Really managing water doesn't mean anything by itself at all; it's what it does to complement good land use. It's a resource and we have to recognize what it is, where it is and what it's supposed to do. But the major base is the land itself and Alberta has a very interesting land base.

I notice that you're here from Wrentham and Manning so, obviously, you're here from all across the province and you know about the dry southeast and the short grass. The important factors on the west side of southern Alberta are the mountains. You move up into that middle part, so called, around Red Deer where you don't have to know much about everything, just rows. You don't have to farm very good, that's just automatic. And then you have east of that, sand and brush, and then you move into the Lakeland area on the east side and then into no man's land around Ft. McMurray where nobody farms. We have a strange phenomenon on the west side in that our agricultural land follows on up north, partly related, I suppose, to air flows due to mountains, the ocean on the west and so on. As a result, we find ourselves farming almost to the Northwest Territorities. And I've covered it and I've had a look at it.

That's the geographic part. Then there's something else peculiar about the province of Alberta. You've seen the shape of it on a map but if you could see a cross section, the province isn't flat. It starts with the mountains and goes downward toward Saskatchewan, particularly in the south. The mountains run north and west and something else happens when you get further north but in the south we have very good drainage. The soil is like cement and because of the fast slopes, the water just leaves and goes to Saskatchewan and into Hudson's Bay very quickly. So we have that problem.

When you get further north where I was just about three weeks ago, near La Crete, Ft. Vermilion and Peace River, you're far enough east of the mountains so that you don't have that drainage. You have very flat land and I ran into a term that was new to me. You've got something up there called "sheetwater." When I went back down south and made reference to "sheetwater" in northern Alberta, they didn't know what I was talking about. I was quick to tell them because it was new to me too. It was interesting to see a quarter section of land like this floor covered by an inch of water. It's all under water. You don't see that down in our part of the country. So that constitutes another kind of a problem.

Then you have variations of soils. Some of that soil up in that north country, the Slave Lake and Peace River area, all the way up into the north, is entirely different than what we're used to. When it gets wet, it goes a little bit like Jello and if you dig a ditch through it, it winds up to be quite a trench. We dug ditches for drainage the odd time that we needed it. Twenty years later that ditch looked about the same as it did when we dug it: two feet wide and a foot deep or three feet wide and two feet deep. It doesn't change. We discovered when you get further north if you try that, you will get a ditch 25 feet deep and 40 feet wide and it doesn't take very long. So we recognize some differences there.

Now, we as a Commission, are charged with the responsibility for looking at water management. What is it, where is it, what does it do, what should it be doing and what should government's involvement be? Well, while we have a lot of it, we have strange distribution. I said earlier that Red Deer was presumed to be central Alberta. It isn't. Central Alberta is north of Edmonton and if you take that line across the province, you discover that where 90% of the population is, you have about 13% of the water. Where 10% of the population is, then you have 87% of the water, so there's something there that has to be looked at.

Water as a resource is totally necessary if you're going to have any development, any growth, whether it be agriculture or industry or for municipal use, whatever. You can't work without it and that's not new to you and it's not new to us. But because we've been into this process now for some time, it's coming through very clearly that we have a resource here that will be as important as energy and will require the same kind of management. It require the same kind of attention and that is part of what our responsibility is. You just simply can't operate without it.

We have five departments represented on the Commission, and let me name them for you: obviously we have Environment, but we also have Agriculture, Municipal Affairs, Economic Development and Energy and Natural Resources. All five of those departments impact this resource. Consequently, we have the benefit of those departments. We have five Assistant Deputy Ministers sitting as members of the Commission and we're finding that that's a very important element because the tendency could be, not necessarily is, but could be for Agriculture to say, "well this is what we're going to do," for Public Lands to say, "we're headed in this direction, this is our bailiwick," and Environment caught in the middle between these two. Then there's Energy and Natural Resources and on and on it goes.

What has happened is, because of the five departments being represented, we have an exchange of views across the table and that has brought to our attention very clearly the need for good, forward co-ordinated planning. I know that Mr. Sparrow is going to be talking about public lands. Mr. Olson has already talked about irrigation, so that sort of divides into a north-south thing if you like. Public lands generally are north; irrigation normally is south.

We're working pretty hard at avoiding a north-south difference of opinion. One should complement the other. There shouldn't be competition. It's being recognized that drainage in the north is equally as important as irrigation is in the south. We have turned our attention to that and are working on an ongoing basis as was mentioned earlier. We are now doing an assessment of what could be done with good drainage in the north and there is a good deal that has to be done.

There are some major differences, however. Drainage, as we discovered, by going up there a number of times, and looking and reading and listening to people like yourselves who are up there, drainage doesn't lend itself to a major process such as irrigation. For example, you can put 200 million dollars into a dam for irrigation purposes but you can't identify one project of that magnitude that relates to drainage. Drainage is fragmented much more than that. We walked around about three weeks ago and took a look at it and talked to those of you who were there and asked questions about what could be done. It seems that the drainage system is much more confined to specific local areas. The drainage program might service 5000 acres as opposed to an irrigation project that might service 150,000 acres, so there's a difference there. Strangely enough, while we ran into all of this funny water that's up there, you also have drought to worry about. You have your dry spells; you had it this year.

All of this, whatever is done, is related to economic development. Economic development in the sense of what does it do to you as a land owner, as a farmer, as a producer? And, because we have, as I mentioned, economic development involved with this, while we're working with soil, working with water, we also have to look at the reasons for doing these things because it's expensive and it has to relate to world markets as well as local development. So we are into a wide range of assessment and recommendations, and unless you can make it pay, there isn't any point in doing any of it and today, we seem to be in a tough position.

The Minister of Agriculture spoke to you about how he views Agriculture's position today. The difficulties, of course, aren't confined to agriculture. They're more visible in agriculture because of the magnitude of the ground you cover. All you have to do is drive through the country on any given day and you can see what is going on whereas you can drive by a business any given day and you don't really know what's going on, what the shape with the bank is or what the problems with the business are. So, while there are difficulties in agriculture and we know it, we have to try to develop a process to overcome them.

The many years that I told you about that I spent in selling equipment, I heard more about the economics of agriculture than I did about business because that's what you were telling me about, the difficulties. But many changes have occurred, and you heard about them, the average yield, the change from say 1940 to 1980, what has been done with good methods, what has been done with good equipment and critical to all of it, what's been done with good timing. Big changes have occurred and the way you use what you have is going to become increasingly important.

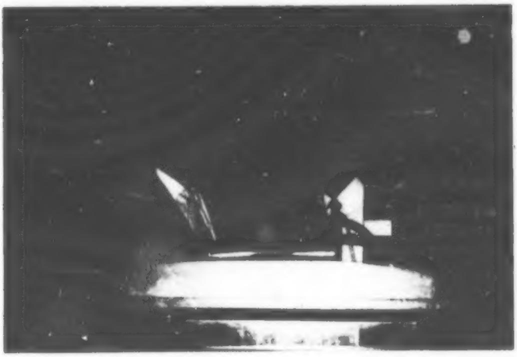
I had a couple of pretty good lessons in this sort of thing. I got curious after 20 years in business and went back and my brother and I bought some land. We decided to farm that to keep in touch. I don't know if you've experienced this or not but one of the things we did, because we had a lot of this old equipment around which I was telling you about, we used to take that out and use it to farm with and we hired people to run it. I remember so clearly, we took out two, what were then, in the early sixties, big tractors. We put a man on each tractor and turned them loose and said "Go out there and do this summerfallow."

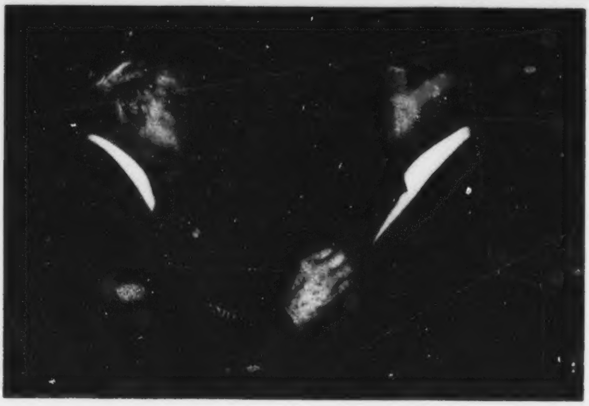
Every three days I would go out to see how they were doing and, by jove, they weren't getting as much done per acre as that equipment was capable of and I wasn't satisfied. So I watched this performance and I thought about it and one day, I said, "Look you fellows, take that one tractor and cultivator over and park it in the yard and now we're going to work shifts. You guys are going to go 24 hours a day and I'll pay you for it but you're going to run one tractor and one cultivator, not two." You know, that after that, every three days they had done a little more than I had anticipated they would do with the two.

There's a reason for it, simply a matter of management and good equipment use. What happens when you have the two of them is that they start in the morning and they do a bit of visiting when they're fueling up and then they go out to the field. They make their six or eight rounds around the section and then they have a little visit, and then they pull in at noon to fuel these things and it doesn't quite work out to the noon break. Then when six o'clock comes, you wheel them in and it's all over. But with one outfit, the guy that was coming on shift might have wanted to visit but the guy that was finished wanted out of there. He'd had his twelve hours, he didn't have anything to visit about so that didn't happen. The fuel truck went out and fueled the tractors. All I'm really saying to you is that's a very small example of some of the differences that can occur in an operation. So we found that two men and one unit would do more than two men and two units and it makes a large difference in the capital investment that you have to contend with.

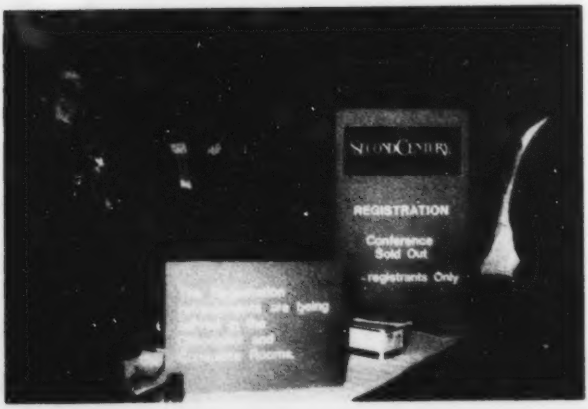
There are many variations of these kinds of things that have to be addressed and certainly there are a lot of things that you as producers can't do much about. You're caught with input costs and you know all about that. Your cost of money is there. On the other side, the markets are out of your hands. When we were in this farming business, had to contend with those things too. You concentrate on doing the very best and that's why I gave you the small example of the two units. Within the limits of what's there, you have to manoeuvre. I know, as you do, that we have farm operators who if they got ten dollars a bushel, would be in financial trouble. We have other farm operators who, if they could get three dollars and fifty cents or four dollars, can still make it. And those are the elements of management that you can look at. I've looked at and learned from you because I saw you doing it.

Mr. Chairman, double the time you allocated but I was enjoying myself. Thank you very much.





HOW'S YOUR FOOD & LODGING?
Harvest 85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UNITIES FOR AGRIC RE

Land, soil and water resources — the Alberta advantage

Maximing natural Crown resources

Honourable Don Sparrow

Thank you Mr. Chairman, for the kind introduction.

Ladies and Gentlemen, it is certainly a pleasure to be with you here today to discuss the future challenges of agriculture and the Rural Economy. I have certainly found the discussions until now to be very stimulating and interesting, and I look forward to more such frank discussions at the conference.

Our Rural Economy is of the utmost important to all of us. As many of you know, our new premier has placed agriculture and the rural economy as his top priority for government. As our economic benefits decline from our non-renewable resources, it will become extremely vital for us to strengthen and possibly integrate our two top renewable industries, namely agriculture and tourism. How can agriculture and rural Alberta be part of the growth of tourism in the province?

As Associate Minister of Public Lands and Wildlife, my department has a very large impact on some of the future directions in the rural economy. However, the pressure on our natural resources is increasing to the point where management of the resource is becoming very complicated. Farmers, ranchers, tourists, hunters, lumbermen, oilmen, hikers, fishermen, recreational users, miners, developers, and environmentalists are putting increased pressures on our public lands. To **maximize the use of these natural Crown resources** and to meet the need of all the user groups is the main objective of our department.

How much Crown land is there in Alberta for all these and other activities? A rough breakdown of lands in Alberta is as follows:

	Sq. Miles	% of Alta.
1. Privately owned	70,000	27.5%
2. Water covered	6,500	2.5%
3. Public Lands	179,000	70%
Total	255,000	100%

Don Sparrow, Associate Minister, Public Lands and Wildlife. Department of Energy and Natural Resources.

The public landbase is very large and the current status of these lands is approximately as follows:

		Sq. Miles	% of Alta.
1.	Environmentally Protected Lands (ie. National Parks, Prov. Parks, Wilderness Areas, Natural Areas).	27,100	10.5
2.	Metis Settlements & Indian Reserves	4,500	1.8
3.	Public Land under disposition (predominantly agriculture uses)	17,600	6.9
4.	Non Settled Public Lands (ie. green zone)	136,300	53.3
	Total	185,500	72.5

As you can gather from these numbers, the provincially owned land base is very large, and as I mentioned earlier, **the pressure upon this land is growing**.

In order to get the best return on your investment in Agriculture, I forsee 3 means of accomplishing this. The **first** is to **make the operation as efficient** possible and to have the **lowest input costs** as possible. The **second** is to obtain the **best markets and prices** possible for your product and the **third** is to **expand the production** of the farming operation and if possible shorten the growing season. I know that the first two means have been/or will be discussed further with you at this conference; however, I wanted to dwell upon the area of expanding production. In order to expand production you need to either

A. maximize the existing land base
or B. obtain more land

A. Maximizing Existing Land Base

1. Before discussing our land policies I wanted to outline for you a process that was mentioned to me, which I found very impressive. The process is known as **vacuum infiltration** and is a system whereby air is drawn out of the shell of a seed and water is forced in. This allows the germination process to start right away. Stan Schellenberger has used the process and was quite impressed with it. The results are roughly as follows - the advanced germination shortens the growing season 10-15 days and the yields are increased 30%. It is a relatively new process and seems to work best for grass seeds, legumes, barley, and canola.

For more information, interested parties could contact my office or the Department of Agriculture.

Of our existing Crown lands that are under lease to Agriculture, we have made a number of changes to encourage this maximization of the existing land base. I should mention here that this was one of the key discussions and recommendations by the recent ECA report on Land Use.

Some of our policy changes include:

2. The department of Public Lands **can extend a farm development lease** with option to purchase to ten years from five years. This will allow the farmer to increase development and time to meet the development requirements on the land before he has to purchase it.

3. As well, new provisions make it possible for farmers or prospective farmers to **credit 100% of rental payments** for a lease with option to purchase, toward the purchase price. Successful applicants who choose to purchase public land will be required to make a down payment amounting to ten per cent of the purchase price when entering into a lease with option to purchase.

4. Successful applicants for these farm development leases have previously been restricted to a 3 year covenant period on resale or assignment. A new change will allow this **3 year requirement to be waived in the cases of undue hardship** or transfer to immediate family members.

5. On farm development leases with an option to purchase, where the purchase price is specified in the contract, the holder may **request a second appraisal** of the purchase price at the time of exercising the option, if he agrees to pay the cost of the appraisal. The lessee will have the option to purchase at the lower price.

6. In cases where an option is exercised by the lessee, but the first payment may create a hardship, field staff can recommend a **postponement of the first installment of principal** up to a maximum of 5 years.

7. For the past 3 years, our department has been working very hard to improve the operations of our **provincial grazing reserves**. The objective is to get the economics of these reserves to a break even basis. By significantly reducing costs, increasing utilization, and increasing fees, we have been able to get most of the reserves to a break-even basis.

As well, in keeping with the ECA Report, we have made the offer to the reserve patrons that if they wish to convert these reserves to grazing associations, and operate them on their own, we would allow them to do so.

8. One of the most important new changes is that under the new administration guidelines for grazing leases, existing leaseholders may now convert these leases to Farm Development Leases with or without option to purchase. In order to qualify, the lessee must have held the

lease for a minimum of 5 years. The maximum amount of land that could be converted is 6 quarter sections and any sale will reflect market value of the land. All **environmentally** sensitive lands will be retained under provincial ownership. Fred Bradley and his troop of watchdogs and my Fish and Wildlife Division will make sure of this.

Each year the Government of Alberta buys significant amounts of land for road development, RDA protection, utility construction, park development, and many other uses. This is more than 10 times in value compared to the land that is actually sold by government to private individuals. With this new sale policy there will be a number of positive impacts. More funds will be spent by the owner on actually improving the productivity of the land. Proceeds from these sales could be used in purchasing environmentally sensitive lands for wildlife habitat. Long term security for the landholder is finally achieved.

9. A new public land allocation policy was recently introduced with draw and tendering systems, and the opportunity for public auction of land. These new systems will provide greater flexibility and fairness into an area which has traditionally been by land posting and given to the farmer with the perceived greatest need.

The purpose of these new land changes is to:

a. Encourage land use to its greatest potential in agricultural production in keeping with the Environment Council of Alberta recommendations prior to opening new lands.

b. Enhance the security and equity base for farm or ranch operators in Alberta.

c. **Increase farm revenue** and revenues accruing to the provincial and municipal governments. Increased provincial revenues will help to offset the cost of acquiring other environmentally sensitive or recreational lands which should be under public ownership.

I extend an invitation to the agriculture industry to give us any other ideas that can be considered.

B. The Second Way of Expanding Production is Obtaining More Land

Most of our agricultural land expansion over the last 15 years has occurred in Northern Alberta. However, given the multitude of resources and land capability, Northern Alberta faces multiple resource concerns.

The planning for use of Alberta's crown lands is done by what we call the Integrated Resource Planning Process which is another Division under my responsibility. The system is designed to obtain the "best use" and "multiple use" of our natural resources. It involves (1) an **inventory** of the resources, (2) development of a plan, (3) considerable public input, (4) a review of the economics, and final approval of plan in which land is allocated to the various uses. It is through this planning system that new agricultural lands are identified.

The economic viability of northern towns is directly related to the regional population base and the related agriculture industrial, forestry and tourism development in the area. To make towns and businesses more viable, an increase in rural population is therefore necessary. The most effective solution may be to expand the agricultural and tourism land base and allow more people the opportunity to get involved. By integrating rural expansion and the needs of small service centres, the viability of the community, as a whole, may be improved.

Integrated Resource Plans have identified large areas of developable land in the Jean D'or and Big Bend areas. Here, 96,000 and 200,000 acres, respectively, have been provided for rural expansion. Significant areas of additional land are also present in other areas. Integrated Resource Plans will eventually determine the allocation of the resource base for the remaining areas of northern Alberta. As these plans are approved, additional land could be made available for development. Funding for roads and legal surveys will be the major constraint which determines the extent of their release for agriculture.

Should the smallest unit of land available for agriculture in the future be 1 section in size, which will ultimately reduce the cost of providing land? This would reduce surveying costs which is another Division under my responsibility, the Bureau of Surveying and Mapping. It would cut the cost of roads by almost 50%.

Agricultural expansion in the next 5 to 10 years, if limited by present road budgets, will be concentrated in the White area or fringe of the Green area. The present annual rate of expansion, involving 25,000 to 40,000 serviced acres of new land and 70,000 acres of other fringe lands is adequate to meet local demands in most areas. Expansion at a significantly larger scale with the necessary increase in funding for infrastructure will have to be questioned in terms of the economics involved. That is, should the government of Alberta build roads, schools, and other infrastructure for agricultural expansion in northern Alberta if, in the long term, costs far exceed the economic benefits? **Presently, the government is examining how these costs and benefits can be measured in order to ensure the economic viability of the integrated resource plans.**

I would be interested in receiving input from any of you with regard to this very important issue.

Wildlife

Ladies and Gentlemen, someone was telling me the other day the fastest growing industry today is bird watching. As many of you undoubtedly know, wildlife play a predominant role **in the tourist economy** of our province, approximately $1 billion per year in Alberta alone. However, you also know that wildlife can also severely damage your crops or livestock. In order to minimize the conflicts between wildlife and agriculture, our government is examining a number of initiatives.

1. Increase and expand compensation programs for wildlife damage to standing crops, swathed crops, bales, and haystacks. Also, place the existing programs under crop insurance at no cost in premiums to the farmer. Additional coverage could be then insured at a very low additional premium.
2. In order to prevent a recurrence of the hay losses by ranch operators and a predictable starvation problem if snow levels are high, seasons and bag limits have been adjusted to increase the big game harvests of deer, antelope, and elk.
3. A complete review of all our policies and regulations with respect to wildlife damage control and compensation is underway.

However, as most of you realize the negative impacts of wildlife on agriculture, there is a real positive economic impact that wildlife has on our economy in Alberta. Fish and Wildlife resources contribute significantly to the immense tourist potential of our province.

It is important that we keep in mind that habitat is the key in ensuring the long term future of our fish and wildlife resources, and the agricultural community can assist with this most worthwhile goal. Dedicating non-productive land as habitat is something that should be pursued.

With regard to waterfowl habitat, 2 initiatives are presently being undertaken. Wetlands for Tomorrow and the North American Waterfowl Management Plan.

Wetlands for tomorrow

My staff are working very hard with Ducks Unlimited to undertake joint development programs on 20 wetlands throughout Alberta aimed at habitat enhancement and waterfowl conservation. Ducks Unlimited has committed $50 million and has just recently accelerated the program from 10 years to 5 years. The Government of Alberta will supply the necessary land for these projects and this will add to the much needed waterfowl habitat.

North American waterfowl management plan

Agreement in principle by a team of officials from the federal, provincial, and state governments of both the United States and Canada was made this year on the North American Waterfowl Management Plan. This is a $1 billion, 15 year program which recognizes 1) that the land use practises of the farmer are the key to wetland conservation, 2) that sound farm soil and water conservation practises benefit both farm production and waterfowl, 3) that farmers should be reimbursed for employing land use practises that encourage duck production, and 4) that habitat conservation programs should be on a voluntary incentive basis.

The plan is an attempt to provide the overall management framework for waterfowl in North America.

Although no agreements have been finalized to date, the plan identifies a joint sharing venture between the U.S. and Canada. It is anticipated that $677 million are to come from U.S. sources and $226 million from Canada. Agreements and programs are to be finalized by 1987.

The Canadian officials on this committee have suggested that each prairie province provide 10% of the funding that is required to be spent within its borders. Of the $362 million required in Alberta, 10% or $36.4 million would then come from this province, another 15% from Canada and the remaining 75% from U.S. sources.

As I mentioned to you at the beginning of my address, tourism and agriculture will be the major long term engines of our economy. Therefore it is absolutely essential that we recognize the contributions of our fish and wildlife resource to the tourist potential and also, equally important, that we recognize the effects of wildlife on our agriculture industry. I discussed the effects of wildlife damage, but there is also the major concern of indiscriminate use by a small minority of hunters and recreationists towards farmland.

Use respect

Respect for the landholder and respect for the person wanting access to the land will be the key to ensuring good recreationist/landholder relations. As many of you know, the Government, along with Unifarm, Western Stock Growers, other farm organizations, and Fish and Game Clubs of Alberta have been promoting the **Use Respect Program**. This fall, with the assistance of 4-H Clubs throughout the Province, many Use Respect signs were delivered to farm homes and the program actively promoted. I would hope everyone involved will continue to address this very key issue in a most positive way. Proper and Good Land Management is the key.

I do have some very definite ideas on how **Agriculture** and **Tourism** can **directly relate to one another**.

1) Put & Take Fish Ponds

Many farmers throughout the province have established their own private fishing ponds and campsites. This is a very real business opportunity that is open to farmers who have private land surrounding ponds, sloughs, and dugouts. Set up a small fishing lodge nearby for us urban guests who want to get away from the concrete jungle. But remember to charge.

2) Fish Farming & Aquaculture

This is a relatively new concept for Alberta which the Agriculture caucus chairman and my department is actively researching. With so much waste heat available from gas plants and electrical generation the potential is there. Planned right you could pay for the heat.

3) Game Ranching

Although no final decision will be made on game ranching (ie. raising wild game for meat and products) until some time next year, the concept is worth receiving input on. Given that you can raise 4 times as much wild game on 1 acre of land as compared to domestic animals, the economics are certainly worth discussing with the public.

4) Game Farming (ie. raising wildgame for display and resale) is an industry that is already operating in Alberta. With some regulation changes and more active promotion, this could be a very economical industry.

5) Pheasant and Bird Shooting Grounds

Some ranchers in Southern Alberta privately raise their own pheasants for the purpose of a fall hunt. We have found these business ventures to be very successful for the landowners and individuals desiring a good pheasant shoot. Good pheasant habitat is the key to these operations and this is an area certainly worth further review.

These are a few definite suggestions involved directly with wildlife, but, there are other interests as well.

When I was in the business world, one of the most important rules that we had was to keep our investments diversified. I strongly feel this should apply to your farming and ranching businesses. Many ranches and farms located on private land are situated in some of the most beautiful areas of our province and consideration could be given to developing your own guest ranch which could include:

guiding services
recreational vehicle trails
fishing ponds
bird watching
riding stables
campground
X-country ski trails
any type of recreational use

As well, those farms and ranches located closer to urban centres could give consideration to:

berry farming
market gardens
urban garden plots
mushroom farming
farm service businesses (welding, electrical work, used implement dealers, machine repairs, etc.)

This diversification of your farm or ranch could be undertaken as a joint venture with your neighbor or other business people in the community. As well, the Hon. "Boomer" Adair recently signed a **Tourism Agreement** with the government which could assist any tourism related development.

In conclusion, I believe the future of agriculture can be quite promising. Given the right economic climate, good land-use practises, and weather, the opportunity for farm businessmen to prosper will certainly be excellent. As Minister responsible for some of the renewable resources, I will continue, with your input, to try to maximize the use of our renewable natural resources to ensure the best possible opportunity for both agriculture and the rural economy.

Thank you

Land, soil and water resources — the Alberta advantage

Farm development—yesterday, today, and tomorrow

Johnny Vos

The reason I am here is because I have been on the farm for the largest part of the last century. What will the next century bring?

What do I mean by farm development? I am mainly going to talk about homesteading - the opening of bush covered land for farming. The majority of the land that can be opened for agriculture is covered by trees. Depending on who you are, you call it brush, or bush, or timber. There is virtually no prairie left in the province that can be plowed and put into crop.

Before going any further I should tell you a bit about myself. I homestead and farm at Keg River, Alberta. It is located at Township 101, 600 miles north of the U.S. border. I have been at Keg River since 1950. Keg River is further from Lethbridge than Lethbridge is from Winnipeg by 6 miles.

I was born on a farm in Holland. We had a mixed farm of 100 acres, spread over five (5) miles. The largest piece of land was maybe five acres. The work was done with horses and by hand. We had 8-10 cows. Butter was made on the farm and sold direct to consumers. Some of the other products like potatoes were sold direct. On the farm we also raised some hogs, sugar beets, oats, wheat, barley, peas, and - during the war - rapeseed. We also had some fruit.

The biggest piece of machinery was a five foot mower, owned with an uncle. A lot of the plowing was done with a single bottom plow with two or three horses. In the thirties there was barely enough money to go around, but we always had enough to eat.

Yes, we had schools. They did not cost as much to run as they do today. I attended grade school and two agricultural schools.

Some of the land we farmed was heavy clay. It had open ditch drains, about 60 feet apart. Horses and men did the work on the land. The grain was seeded and harvested by hand. Some of the seeding was done with a seed drill.

All of the grain was cut by hand. Beets and potatoes were dug by hand and ditches were cleaned with spades and shovels. Some of this work went on in rain or snow. I spent the war years (1940-1945) in

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Johnny Vos farms at Keg River, Alberta.

Holland on the farm and in school. In one of the schools, we were downstairs and divisional headquarters for a German army group was upstairs.

The only fuel used on the farm was the fuel used when the custom thresher came to thresh grain; maybe 20 gallons a year.

When the war was over, I spent two years in the army, was discharged in 1948 and came to Canada shortly after. There was not enough land for all the farm boys to get a farm, and a factory job was not that attractive. In Canada I spent the first year on a dairy farm in Ontario.

I came to Alberta in 1949, worked in Claresholm and really liked the west. However, the job on the farm wound up on December 1st and that winter I attended the Vermilion School of Agriculture. It was a fine place as much socially as academically. We made a lot of friends and were like a big family there. I was sad to hear that the administration building and dormitory burned the other day.

In the spring of 1950 I was offered a job on the farm at Keg River. I arrived there in April of 1950, homesteaded in 1951 and was married in 1952.

So here you are. You have a wife and 320 acres of land, all bush. Have probably $1000 to your name and have to build a house (12 ft. by 14 ft. at first). Where are your priorities? How are you going to tackle this? There are no textbooks and no two situations are the same. It's a good thing there were not too many economists in the area. You have your own piece of land and you are going to succeed. So what do you do? Do you buy a fancy pickup or car when you have no tractor or breaking plow? Do you fix up a fancy house and break no land? We were 125 miles from an elevator, 60 miles from the closest town and four miles from a gravel road. There was no power and no phone.

How did we clear in 1952? The days of the axe were gone. There were a few cats and tractors with brushcutters, and if you were lucky, you could get a D4 with an operator for seven dollars per hour. If the brush was not too heavy, you could get it cut and piled for $10 per acre.

Then after waiting for it to dry, we would get a fire permit and burn. The drier the weather, the better was the burn; however, there was also more danger of the fire getting out of control. After repiling the leftovers by hand and burning, the land was ready to plow.

A lot of the breaking was done with a 30-35 H.P. tractor on steel with a single bottom breaker. Some of the stumps stalled the equipment and one had to back up to take another run at it. The land got broke if the equipment held out. Once the land had been turned over with the plow, it had to be dragged, disked and then the roots picked. If you were lucky and had some money, you could get a local family to bunch and burn them for you for $1.50 to $2.00 per acre. Otherwise you and your wife did it.

If everything clicked, your first patch would be ready for crop the next spring; that is if you had guessed right about your finances, your capacity, and the weather. It was said that virgin soil did not need any fertilizer. There was not any anyway.

Financing the operation was always a problem. In between working on the homestead, one had to find a job to bring in some badly needed cash. This often meant leaving the farm in the winter and getting a job in the oilpatch or logging industries. Some homesteaders trapped fur. We could not get any loans from banks because we did not have title to the land. Maybe it was just as well too. If you got a job, your family stayed on the farm for the winter. You hoped that the job was not too far away so that you could come home now and then.

In the winter of 1952-53, I got a job to control wildlife. We were hired to set poison for rabies control. We got $9.00 per day for labour, a horse and equipment.

The first crop on breaking was usually flax because some people had had 30 bu./acre at a price of $3.00 per bushel. Flax is about as risky a crop as we could grow. I think my first crop was about 15 bu./acre but I don't remember the price. There were a few combines around and we had a custom operator (an established farmer) take it off.

You wonder how we survived. We had a chance to rent a cleared ½ section with machinery in 1953 and took it. We paid all expenses and then split 50/50. We cleared maybe 40-50 acres per year on the homestead. We went into the hog business and raised 200 hogs per year. We had no fancy buildings, just a farrowing pen, some fences, and in the winter the good old straw stack from the threshing machine. We survived and did not quit.

We raised potatoes commercially for ten years and had the first irrigation system in the area. We do not know to this day if the land or the water is considered suitable for irrigation.

Homesteading and farm development today

We hear about the seven million or more acres of good soil that are left in Northern Alberta, than can be cleared and farmed. Before we say too much, let us classify this soil and see where these areas are. If we come to the conclusion that we have substantial areas of #2 and #3 soil in blocks, let us set these aside for agriculture. I say in blocks because a quarter section here or there does not warrant the services that are required for farming today.

Farming is just like any other industry. We have to have a few things to survive and make life easier. We need a place to purchase what we require and a road to it. Telephone, electricity and natural gas are almost a must. Water can be a problem too - either not enough or too much.

Land clearing today is basically the same as in years gone by, but simple it is not. If you happen to draw a parcel of land today as a homesteader, you better have a bit of cash. You will need a daddy that will help you or a friendly banker that will lend you some money.

The cost of raw land is approx. $50.00 per acre. If you are lucky, you will have a road that gives you entrance to your parcel and maybe even a dugout on the place. There will be no power, no phone and no school and you won't even be able to move a house trailer on the place because the furnace won't run without power. There are alternatives but I just want you to think about it. They had a rule at one time that to prove up to your homestead you had to have a permanent building on there. It may have been a good rule.

Now comes the clearing and the expenses. Say you want to clear 100 acres. You talk to several people and you may be lucky if someone is interested in doing it. It'll cost you $60.00 - 145.00 per hour for a cat plus a brushcutter and piler. You'll find out how much per acre it is when the job is done. Sometimes you can find someone who will quote a price per acre. It will cost from $25.00 - 100.00 per acre to get the brush cleared and piled depending on the size of the trees.

Next comes burning and then repiling. When the bush is heavy, a cat has to be used for repiling. Breaking will be done with a cat or large 4-wheel drive tractor with a 2, 3 or 4 bottom breaking plow. A large rotovator has been used to do the breaking, but it chops most of the stumps into smaller pieces which are harder to get rid of.

The land must be levelled and disked, then rootpicked again. There is now a windrower to rake up the roots which runs off a tractor P.T.O. (gives your wife a break). The name Dika should be mentioned here. Mike Dika from Rycroft designs and builds brushcutters, pilers, breaking plows and rootpickers. He also builds equipment for the logging industry.

Land Development Costs

Land	50.00/acre
Clearing	25.00 - 100.00/acre
Breaking	20.00 - 40.00/acre
Disking	15.00 - 25.00/acre
Rootpicking	20.00 - 30.00/acre
TOTAL	130.00 - 245.00/acre

These costs may vary depending on the job. It is important to not plow too deep as the best soil is near the top.

In regard to drainage, some of the land has a nice slope and is sandy. This is fine as long as it does not get too dry. Drainage should not be a problem. Some of the land is as flat as a table and being clay soil, the water will not get away fast enough. There may be some natural draws, but often these are too wet to break up and they are full of grass. There will also be a problem with runoff in the spring. One has to make some improvements so that the water will move off the land faster. If someone speeds up the flow of water in one area, problems may occur in another area. You may have a dry place to farm in the spring, but in the process may have drowned out one or two neighbours. Another problem is that when natural cover is removed from the land, water movement is changed completely.

One can see that some system or regulations must be in place to avoid these problems. We have water resources but they often get involved after the problems are there.

I have a few comments about financing. Who does the homesteading today? Just about anybody who says that he wants to farm can get a piece of land if he is in the right place at the right time. Last year in our area a school principal who is about to retire drew a parcel of land when local farm boys ended up with none (maybe he has no trouble with financing).

This points to the fact that if you want to get some land, you had better have some money or have a place where you can get some. In the first few years the expenses will be far more than the income off the land. Income is always better than loans. Farm boys usually work in the oil or lumber industries in the winter.

Some also have a job part of the summer. Some have been working out for 30 years and it is always the last winter out. If one clears 100 acres a year and gets it ready to seed, he does well. You need some cash, machinery and a place to live. Some people need more or less. We all know that anything borrowed must be paid back. The process is costly and there is no guarantee of a crop.

Return on investment? A homesteader does not worry about that. If the cost of production had to be set by the Public Utilities Board, wheat would be $15.00 per bushel.

Why do we need more farmland? Most land that is cleared is seeded to grain. If you have to work off the farm, grain may be the answer.

A mixed farm may be better for the economy. Cattle can live on straw and roughage and can graze land that cannot be seeded. We can raise enough beef in the north to look after our own demand and some for export. Some changes must occur in the system. Beef now goes to Edmonton and is sold and killed there. The farmer pays the freight. The consumer pays the freight back on the finished product. It sounds like the Alberta-Ontario situation - it happens in our own province.

A similar situation occurs in some of our inputs. Last December the Rainbow Oil Pipeline had shipped one billion barrels of oil at $15.00 a barrel - that's fifteen billion dollars. That oil came out from under our feet and would it not be fair if we paid no more for fuel than people in the central part of the province.

Yes, farming can be profitable. Don't get an economist involved here. You hear about the 40 bushel rape crops as well as the 100 bushel barley and the 60 bushel wheat. If you don't get these yields, you are a "poor manager". Talk to the Minister of Agriculture and see what the yields were around Claresholm this year.

This year in Keg River we had the driest spring I have ever seen. What moisture we had evaporated. The first grain we seeded came up fairly well. The later crop was very patchy. I decided not to seed rape on the stubble where I had planned because there was no moisture left.

Rain held off until July and then it was scarce in places. We had frost on July 19 that cooked some of the wheat that was in bloom. Frost occurred again on August 8 and 21 (-5 C. in places). Harvest came with everything in various stages of maturity and some of it frozen.

Then we got rain and high humidity. We need about 200 combining hours per year. We had about 20 hours that we combined grain that was dry. The dryer worked overtime. About 20% of our crop is in the swath under the snow. Only part of our fall work is done. Snow came for the second year on October 17 - about two weeks earlier than normal.

I harvested 60 acres of wheat at 26-30% moisture and dried it. It was still tough when I got it to the elevator and sold the lot for $1300 ($22.00 per acre). My cash cost, not including labour, machinery or depreciation, is $60.00 per acre. Therefore, my return was minus $40.00 per acre. On 500 acres that is minus $20,000. My crop was not all that bad but others had worse. I can weather the storm for a year, but how about the good, young, ambitious, risk-taking farmer that owes F.C.C., A.D.C. and the bankers some money?

This is all part of farming and land development. The trees on the land may look good after all. The birds are still singing there and they did not cost the farmer too much money.

We had some good years but certainly can't spend all our money the year we get it. I have had 80 bu./acre barley, 55 bu./acre wheat and 35 bu./acre canola. Those yields happen about once in 10 years. The average is about 50 bu./acre of barley, 35 bu./acre of wheat and 20 bu./acre of canola.

If we look back over the last few years and see the changes in agriculture, one can only guess what will happen in the next 100 years. Farmers' survival is at stake but agriculture must survive if we are to survive.

Where do we go from here? Let us take good care of the land we farm now. We can't afford to have it blow away, wash away or lose all the fibre that is in it. If we take care of it, it will take care of us. We are not going to raise food from an office tower. We need people on the land to raise our food. Once you lose a farmer it is hard and costly to train a new one, if it is possible.

We should diversify. More of the processing should be done here. Maybe some of this processing can be done on the farm.

Research must continue on the farm and in the institutions. We must be open to new ideas. Research should not be the testing of things we know now.

I will throw out some ideas for your reflection. Since the air, which is about 80% nitrogen, surrounds us, why not find a way that the farmer can apply this nitrogen directly to his soil or crops. Or, how about an operation that will kill all weed seeds with one pass over the field. Or, maybe a solar splitter in our back yard that splits water, so that we have hydrogen to run our machinery on.

After harvesting this fall, it has come to my attention that if we had varieties that we could straight combine, we would be ahead. A standing crop of grain can take full advantage of the sun and wind and dries quickly. Why should we use a swather to lay a nice standing crop down, so we can later pick it up out of the mud? Our HY 320 wheat is a good example of a grain that will stand up. How about a barley variety that we can consistently straight combine without the heads falling off.

Finally, I must agree with what our new premier, the Hon. Don Getty, said in a letter to all delegates; "Our farmers and ranchers must not merely survive, they have a right to prosper."

Thank you.

Land, soil and water resources — the Alberta advantage

Soil conservation requires integrated agricultural systems

W.B. McGill

I wish to share four ideas with you:

- Agricultural economic productivity (economic output/input cost) is low and declining.
- Land degradation is partly responsible by increasing input costs and reducing ability to rebound from recessions.
- Soil conserving systems can reverse degradation trends, reduce risk, and lead to greater economic productivity.
- Soil conserving systems require an integrated agriculture developed around the unique attributes of the resource base for each soil-climatic region.

Declining economic productivity

Agriculture is big business. Capital investment in farms has increased about three fold in the last decade; eight fold since 1965. It reached $37 billion in 1982 but declined to about $33 billion by 1984 (Fig. 1). The increase is significant even after inflation has been deducted and would suggest considerable confidence in the industry. Net income, on the other hand, has fluctuated during the last two decades. Lows are usually followed by growth beyond the previous peak. For example, the low of about $220 million in 1970 and 1971 was followed by a resurgence to $744 million in 1981 (Fig. 2). The drop in 1976, 1977 to a low of $324 million was not followed by a gain beyond the previous high of 1975. By 1981 net income had recovered to $770 million, or about the 1975 level and has declined ever since. Net income in 1984 dollars was $297 million. In 1965 it was $286 million. When one considers the effect of inflation, net income in 1984 has dropped to 1/3 of what it was in 1965. In 1981, it was about equal. One must conclude that while there have been some very good years, the trend in net income is discouraging.

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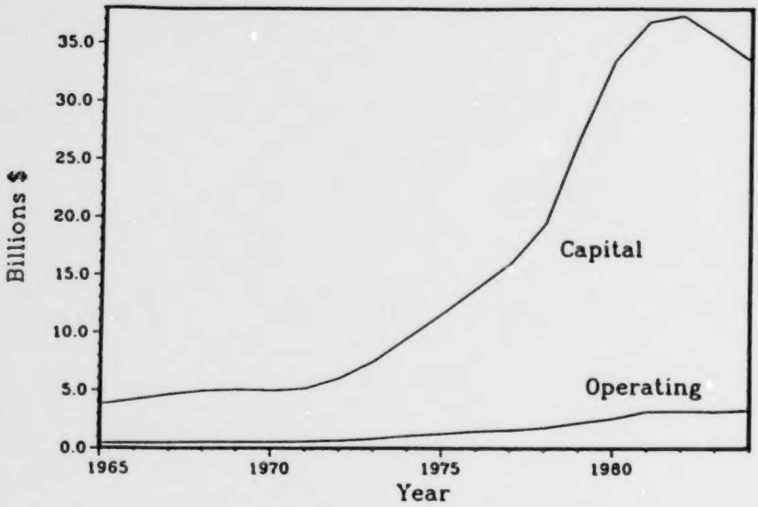


Fig. 1 Operating expenses and capital investment in farms in Alberta. From Agricultural Statistics Yearbook. Alberta Agriculture, Edmonton

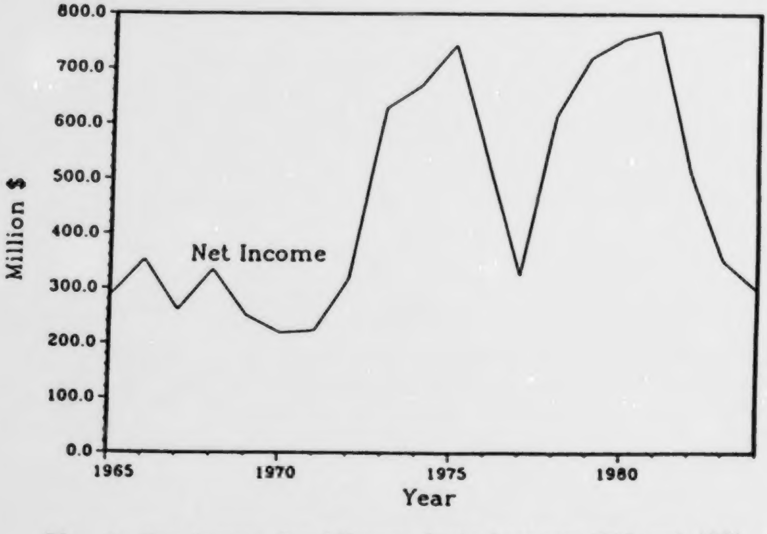


Fig. 2 Net income for Alberta farms between 1965 and 1984. From Agricultural Statistics Yearbook. Alberta Agriculture, Edmonton.

While net income shows no real tendency to improve, operating costs continue to grow consistently. In 1965, operating costs were about 60% of total production value. In 1981, they were 81% and in 1984, they were 92% (Fig. 3).

Return on operating and capital investment is the most depressing picture of all (Fig. 4). There have been a few recoveries in the downward slide but nothing very convincing since 1973 when one recovered a $75 profit on each $100 invested in operating. Return on capital and operating was, however, only 7.5%. By 1984, return on operating and on operating plus capital investment was only 8.9% and 1% respectively.

Land degradation has economic impacts

The biophysical aspects of land degradation have been documented in Alberta since the 1930s. Considerable good conservation work was done during the 40s and 50s resulting in adoption of some sound farming practices. Summerfallowing was not, however, one of them. Attention to biophysical aspects of land degradation waned during the 1960s and 1970s when chemical agriculture came of age with its attendant increased production and apparent diminished need for attention to soil conservation. The benefits derived were partly due to a high quality resource base which responded magnificently to small amendments. The perception was that the benefit was all due to the amendments, that the resource base was static, and that it had little economic impact on production. As the same time, summerfallowing could always be relied on as a cheap quick "fix" to replace fertilizer if input costs got high.

The soil resource is, however, not static. In 1976, the Alberta Soils Workshop held a symposium on Soil Nitrogen. One outcome was documentation of changes in soil nitrogen over time and the prediction of accelerating needs for added fertilizer or biologically fixed N. A few links were made to soil quality and concerns were expressed about where this would lead economically. In 1981, the Alberta Soil Science Workshop focused on the issue of land degradation, prepared a comprehensive summary of the state of our land, and warned we were facing serious problems of land degradation. A few listened. In 1982 and 1983, the Environment Council of Alberta released several excellent reports on our land resources and held a series of public hearings. Many practical solutions were proposed. The Senate Committee on Agriculture Fisheries and Forests released "Soil at Risk" in 1984; further documenting the problem and making several recommendations for action at the federal level. Still, however, the links between soil quality and profits are not well understood.

I submit that land degradation is as much a part of the present economic malaise in Agriculture as is weather or prices. While the biophysical realities have been documented, the economic links are more nebulous. Land degradation is an accumulative problem and as such, it can get worse each year. Management practices and increased

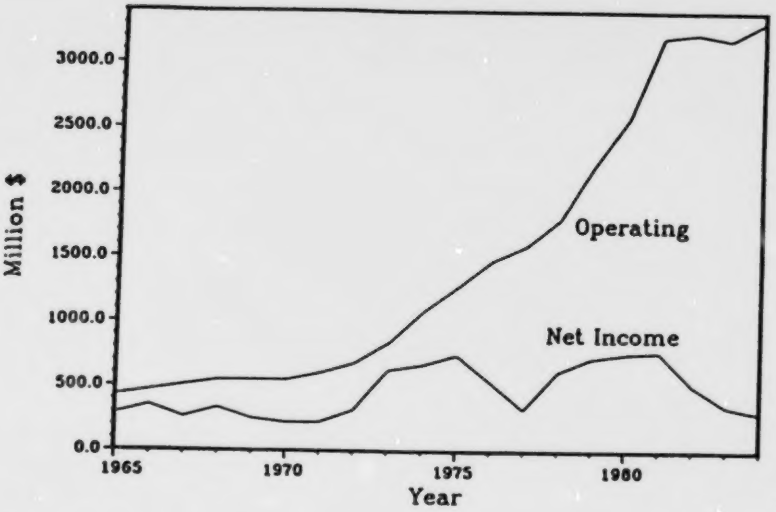


Fig. 3 Comparison of trends in farm operating costs and net income for Alberta between 1965 and 1984. From Agricultural Statistics Yearbook. Alberta Agriculture, Edmonton

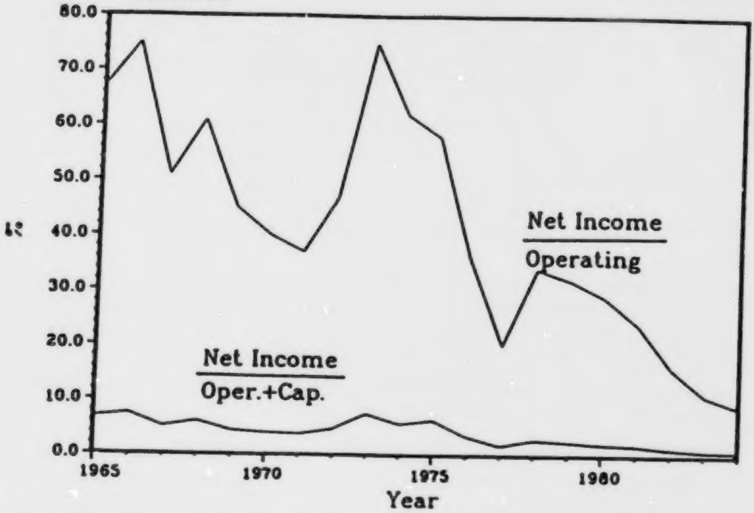


Fig. 4 Trends in return on investment in farm operating or capital plus operating (net income as % of investment) for Alberta. Calculated from data in Fig. 1, 2, 3.

inputs can, however, mask these effects. Such has been the case and we have not really noticed the problem until recently. If fertilizer is taken as an example, then yield or production increases should follow from increases in its use if the land base is static. If, however, the soil resource is deteriorating, increasing inputs are needed to mask it. I have set 1966 as the base year with index of 1.0 for fertilizer use (tonnes of $N+P_2O_5+K_2O$), wheat production, and barley production (total for the province). From 1966 until 1984, there was a four fold increase in nutrient addition to soil (Fig. 5). There has been about a 20% increase in total wheat production and up to twice as much barley production. The area in wheat has not declined since 1966. In 1966, 70% of wheat was grown on fallow; in 1981, 56% on fallow land. Average wheat yields on fallow increased from 1.17 tonnes/ha in 1966 to 2.48 tonnes/ha in 1981. The corresponding yields on stubble were 1.5 tonnes/ha in 1966 and 2.06 tonnes/ha in 1981. Barley yields on fallow were 2.85 tonnes/ha in 1966 and 3.10 tonnes/ha in 1981. The corresponding figures for stubble were 1.92 and 2.53 tonnes/ha for 1966 and 1981 respectively. One must conclude that the quality of the soil resource has significantly reduced expected yield increases. In other words, if the land quality in 1981 or 1984 were identical to that in 1966, the benefit from increased fertilizer use would have been proportionately greater. A word of caution is needed here. Part of the reduction in land quality may be either a reduction in quality of a particular site or shifts to sites where soil quality was originally lower. While such shifts have probably been a factor for barley, they are likely less important for wheat.

Physical use of at least one important input has increased faster than physical output of wheat and barley. Similarly, the value of crop production (all crops) has steadily increased to about four (4) times the 1966 value. The corresponding increase in expenditures on fertilizers, however, has been ten to twelve fold. Trends in expenditures on fertilizers and increases in value of crop production tracked each other closely until about 1974 (Fig. 6). Rising energy costs have increased unit prices for fertilizers, and lowered soil quality has increased the amount of fertilizer needed to achieve a unit of production. Together they have widened the gap between expenditures on inputs and value of output in the field crops sector (Fig. 6).

The above shows that the cost of land depreciation is real. Because of its slow accumulation, we are not always aware of it. The cost can be estimated from the biophysical data available and mentioned earlier. In a report prepared for the ECA hearings on land, M. Anderson and Associates make the following statement:

> "Results show that expenses related to fixed capital resources of land and buildings and the quality of the land itself make a significant impact on estimates of productivity growth."

Costs of land depreciation (reduced land quality) have been calculated as a percent of cash receipts for crops using data

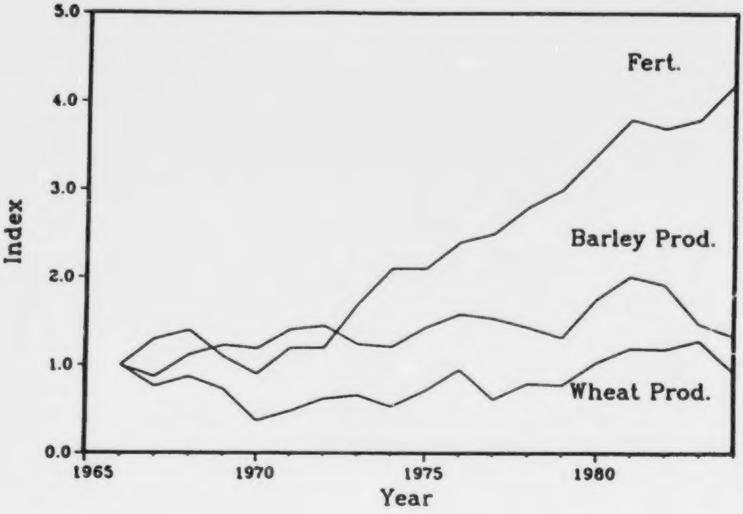


Fig. 5 Index of quantity of N, P_2O_5, K_2O used and of tonnes of barley and wheat produced between 1966 and 1984. From Agricultural Statistics Yearbook. Alberta Agriculture, Edmonton

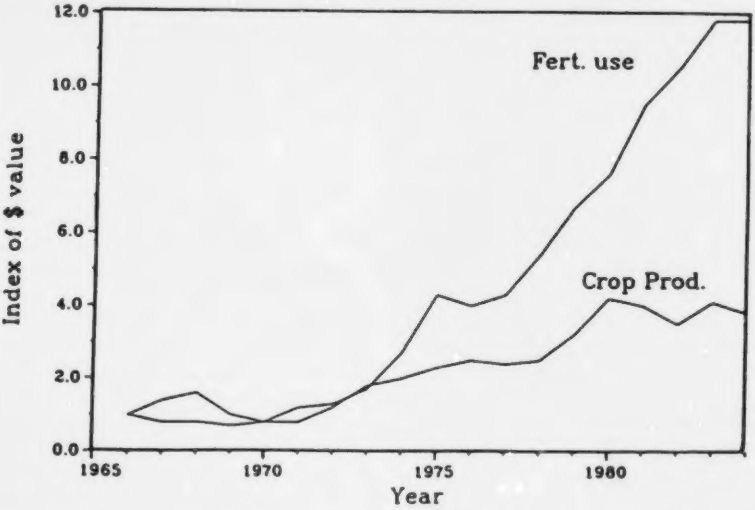


Fig. 6 Trends in total cost for Alberta of fertilizers used on farms and value of total crop production between 1966 and 1984.

presented by M. Anderson and Associates. Effects of degradation have been with us for some time but the economic impact has increased from the equivalent of 7.6% of crop cash receipts in 1965 to 18% in 1979 (Fig. 7). Data are not available for 1984.

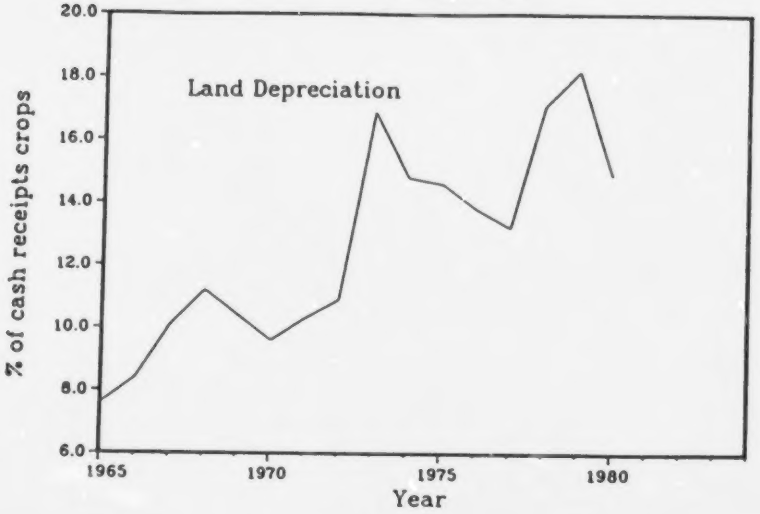
The effect of degradation on profits may be substantial. For example, only about 8% of gross income was left as net after operating costs were deducted in 1984, and a **minimal** estimate is that land degradation costs were equivalent to 6% of gross farm income (Table 1). Consequently, if land degradation costs are not now accounted, and we continue to depreciate land, our real profit is almost zero. If land degradation could be arrested, profits would be 8% + 6% = 14% or 1.75 times what they are now.

Soil conserving systems stabilize agriculture

Lowered profitability of agricultural primary production is due to many factors, including market and pricing vagaries, weather, interest rates, land prices, and land degradation. Land degradation is especially pernicious because it reduces management options; increases susceptibility to climatic extremes; and it is accumulative, so the price must be paid each year, just like taxes. But unlike taxes and death, land degradation is not inevitable. Much of the technology dealing with this issue, however, is of a problem solving nature. How to restore a damaged soil? These may be expensive operations (eg., earth moving, drainage works, etc.) and profits lost prior to restoration are, of course, not covered. True soil conservation **prevents** degradation rather than merely curing existing ailments.

True soil conservation reduces risk by optimizing production strategies with the unique characteristics of the resource base. True soil conservation reduces risk by operating within the strengths and dynamics of the resource base, rather than attempting to oppose them. For example, using many of our Luvisolic soils for grain production when they are ideally suited to forages etc., is an attempt to oppose nature and the resources at hand. In good years the rewards may be substantial; but the risk is high; land degradation is accelerated and in the long term, the system is neither stable nor profitable.

Diversification reduces risk. Risk from climate is reduced by diversified production systems which do not all require the same climatic conditions for optimum performance. Although windfall profits are not possible during exceptional years, neither are complete disasters. Diversified production systems are agronomically sound. They take advantage of the heterogeneous nature of soils. They utilize the resources at hand more effeciently, they reduce susceptibility to pricing fluctuations for any one product or for specialized inputs, and they provide greater opportunity to utilize the residue from one part of the system as a resource for the next. Diversified production is, therefore, important for both soil conserving systems and economically stable agriculture.



Source: M. Anderson & Assoc.
ECA83-17/1B30

Fig. 7 Land degradation costs calculated as a % of farm cash receipts received for crops in Alberta. Calculated from data presented by M. Anderson and Associates, 1983. ECA83-17/1B30. Based on estimates of production loss from saline areas, fertility losses (fertilizer addition x 0.8), and erosion losses. For details see the above publication p. 150.

TABLE 1. Relation of Net Income and Land Depreciation costs to Gross Income (calculated from data in Agriculture Statistics Yearbook and M. Anderson & Associate ECA 83-17/1B30.

	Net Income / Gross Income	Land Depreciation / Gross Income
1965	40%	3.7%
1980	23%	6.9%
1984	8.2%	6.0%

*Estimated using the 1980 depreciation cost.

Agriculture is big business with a major investment in physical plant, of which the regional and site-specific attributes are largely ignored. It is like a manufacturer trying to produce blue jeans in a plant designed for producing shoes. It isn't profitable; but markets, interest rates and capital costs are not the only reason. Much of our agricultural policy is designed to achieve goals that, in part, encourage blue jean production in shoe factories. There is an implicit assumption that the natural state of affairs is for the agricultural engine to be driven by political objectives. **Political objectives control the engine and interfere in most aspects; but whether we like it or not, agriculture is truly driven by three basic resources. They are: soil, climate, and people.** We must get back to those basics. We are not Iowa or California. We are not France or Britain or Germany. We cannot continue attempting to mimic their agriculture. Our agricultural resources are unique. **We must develop a unique agriculture based on our resources.** To the extent that political objectives require interference with the logical use of our resources, society must be prepared to subsidize the added costs both of production and of maintaining the resource base. If society wishes not to maintain the resource base, it is hoped that decision is taken with full knowledge of the fate of Mesopotamia and many other regions.

The potential of the agricultural resource in Alberta is not being tapped. I submit that economic productivity could be doubled or tripled and land quality maintained or improved. A great future is possible. But like great wild beasts, great futures are not easily captured -often not easily seen. In the past we have tried to make agriculture responsive to existing market demand and to manipulate where various forms of agriculture are practised. Both approaches ignore the resource base and both approaches have failed. The idea that demand is supply-induced deserves more attention. **We should decide what our resources will permit us to produce and process, then find or create a market.** Surely we can at least replace some existing imports. I am confident that with innovation and positive thinking, we can create markets for uniquely Alberta products. Fifteen years ago there was no market for canola oil. There is now because we have canola oil. The same could apply to many other commodities.

I, therefore, submit that a viable agricultural system can be developed which is driven by our resources from the bottom up; rather than by politics from the top down. Such a system will work. It will conserve soil because management is integrated with the dynamics of soil processes - not in opposition. If we try to function in opposition to soil processes, then in the short term by definition, either we lose or the soil loses. If we lose, we are out of business; if the soil loses, we lose the soil.

Perspectives for soil conservation

Five major concepts are involved. They can be remembered easily as RIMED.

R: Resource Based
I: Integrated
M: Markets
E: Education
D: Diversification

Resources drive agriculture. If we are to compete internationally, we must be innovative in their use. We get less radiant energy and heat than Iowa. How can we compete unless we make better use of what is uniquely ours? If we get less radiant energy, we should try to capture it more effectively. Perhaps that means intercropping or altering canopy geometry of existing crops. Intercropping with crops having different rooting systems would reduce competition for soil volume, increase water use efficiency, increase C flow into soil; and by virtue of greater root and associated soil biological activity, possibly improve soil structure. The link between optimum resource use and good soil quality is there. Many other potential approaches using plant roots to improve soil could be cited which could be developed into economically useful practices.

Integration of all sectors of agriculture is important to soil conservation. We are fortunate in that our heritage has been mixed farming with narrowly specialized units a recent phenomenon. Economics of scale we understand. Economics of integration are the hope for our future. We have tended to consider large scale but extensive operations to be sophisticated. The sophisticated and profitable operations of the future will be highly integrated, resource efficient, and much more intensive. Such a development is necessary for soil conservation. Soil conservation is necessary for agriculture. Integration is, therefore, necessary for agriculture to survive. The grains and livestock sectors of agriculture must be more closely integrated. The present division between them - based upon an overemphasis on commodity rather than resource - is unstable. It is like manufacturers of automobile engines arguing that their interests are not at all linked to those of manufacturers of automobile bodies. Agriculture is inadequately focused on the completed product; rather, it is destructively preoccupied with the parts or commodities which are raw materials at best. Greater integration is necessary for soil conservation because it shortens nutrient cycles and optimizes water use. A grain export economy for example, removes nutrients from Alberta and exports them to Eastern Canada, Europe, or Asia. Some are retained in the soils there, but to complete the cycle of nitrogen, it must be biologically converted to a gas, travel through the atmosphere, and then be reconverted to NH_3 using natural gas in an industrial process. Biological reconversion is possible using energy from the sun but with a potential associated loss of dry matter production. The most rapidly growing use of exported grain is for livestock feed. A more integrated system would produce the meat here and export it. That way we could retain the nutrients in the manure which account for 60-80% of the original nutrient content of the grain.

The grains industry would benefit from improved soil, the livestock industry would benefit, the urban community would gain processing profits and employment. We don't do that now for many reasons. None are insurmountable. One is that the federal government provides a subsidy of about $650 million annually to the railroads to ship grain out of the prairies. A tempting, but perhaps uncharitable conclusion, is that indirectly taxpayers are contributing $650 million per year to prevent soil conservation.

Markets link supply with demand. Considerable effort goes into marketing our agricultural products. Those involved are to be commended for their success in the most competitive international market. Continued, perhaps more aggressive efforts are needed in marketing. A greater concern, however, is what are we marketing? Mostly raw materials. The finishing and processing part of agriculture has lagged behind primary production. Again political considerations have contributed as have resource constraints. Technology and innovation can help overcome resource constraints. A public will is needed to remove political barriers. Exports of finished or processed materials from Alberta are very low. Alberta would not want to be known primarily as a whisky producer but the value of whisky exports in 1983 exceeded the value of exports of dairy products, eggs and honey; hard spring wheat flour; cereal preparations; fruit and fruit preparations; vegetables and vegetable preparations; sugar and sugar preparations; other foods and materials for foods; oil seed cake and meal; raw hides and skins; fur skins undressed; other crude animal products; seeds for sowing; flaxseed; oilseeds (other than canola and flax); and other crude vegetable products. Clearly there is a long way to go. Emphasis on the value-added aspect of agriculture would permit a greater range of primary production and create many additional outlets for it. That feeds back to soil conservation by increasing the range of opportunities to capture unique resource attributes. At the very least, a small start can be made by replacing existing imports and going from there.

Education of the public, of producers, and of those in formal educational institutions is needed. Soil conservation is a public issue for three reasons. First, although land is privately owned, it is in reality on loan from succeeding generations. Second, soil quality markedly affects the profitability of agriculture and the future of this province depends upon agriculture and forestry. Your livelihood is at stake. Third, urban aspirations (eg., cheap food) influence government policies which in turn control primary production strategies and ultimately, soil quality. The urban community is responsible for soil deterioration equally with producers. Political wills are urban. Soil conservation requires a political will.

Education of producers is needed in terms of exposing them to new alternatives, demonstrating effectiveness of recommended practices, and alerting them to the consequences of deleterious practices. Simple reclamation/restoration remedies are too little and obviously too late. Associated with this is the need for far more detailed land/soil related information than is now available. Detailed soil surveys of each farm are needed. It is not possible to manage a resource without knowing what it is. A similar need exists for agroclimatic data. Finally, the feedback between soil characteristics or soil quality, climatic conditions, range of suitable cropping systems and their productivity, must be more thoroughly researched. It is a serious mistake to assume that soils are static and that the static data now available will suffice.

Education is needed through the public school system. As a nation and a province we are dependent on resources and especially on soil resources; yet our educational system ignores them. Again, this is controlled by the urban conscience. The urban community needs to know, your children need to know, and everyone needs to care.

University education has also been inadequate in this area. Our programs have reflected the trends throughout society toward specialization. Sometimes narrowness has been confused with rigor. Consequently, agriculture programs are frequently oriented toward plants, animals, soils, engineering, economics, food, etc., but have not successfully integrated those parts. Teaching in soils has for the last several decades been organized around scientific disciplines such as Soil Chemistry, Soil Fertility, Soil Physics, Soil Biology, etc. This approach has been necessary and useful. It is, however, unfortunate that teaching programs have as yet been unable to emphasize the soil system with a collective set of attributes uniquely benefitting or disadvantaging various uses. We must take the next step and integrate the scientific disciplinary knowledge for individual soils or groups of soils. This must be done within the context of their conservation for long term production of food and fiber and for maintaining environmental quality. The soil must become the unit or focus of such teaching; building upon the scientific disciplines, and in the context of man's use and conservation of it. We need to teach about Chernozemic soils, about Solonetzic Soils, about Luvisolic Soils, etc. I look forward with optimism to seeing that happen at the University of Alberta. The needs have been recognized and there is an encouraging degree of support for such an approach. Even more gratifying is the possibility of extending this integrative approach to formally link teaching and research to agricultural systems. Greater integration of the agricultural industry will be facilitated by university graduates who are no longer shackled by over specialization. The university has a responsibility to show leadership, however. It is not enough to advocate a more integrated approach, we must reflect that in our research. We have an obligation to combine our collective wits, devise such systems, examine their strengths and weaknesses, and make that information known. We don't have all the answers to devise perfect systems, but we must not succumb to paralysis of analysis either. An integrated approach such as this will generate considerable new knowledge about emergent system properties. We need that information to foster soil conservation in harmony with viable, profitable agriculture.

Diversification is perhaps as much an outcome as a component of a soil conservation strategy. Soil conserving systems tend to be diversified, at least on a regional basis. Soils are diverse. Local climates are diverse. Consequently, any system driven by those resources must reflect that diversity. For example, is it possible to make better use of wetlands as wetlands rather than drain them? Is it possible to use some of our land in central Alberta for production of trees on small areas where other crops are not suited? Progress has been made in this area in Norway for example. Can we mix profitable production of trees with cattle grazing, or with forage production? Why can we not make more use of poplar trees? Why not put more emphasis on winter crops for some of the drier parts of the province including the Peace River area? That way more effective use can be made of early spring water and may reduce

summer and winter crops to get three in two years, thereby keeping the soil covered, perhaps improving snow retention, and increasing water use efficiency? Some of the above suggestions seem extreme. They are intended to be. Many may not work but if we limit our horizons, we will never progress. All of the above suggestions require follow-through from production to processing and market development. They all promote soil conservation.

Conclusions

Agriculture is big business with a $35 billion capital investment. The physical plant is soil. It is deteriorating and reducing economic activity. This trend will get worse if changes are not made. Simple fix ups are not enough because they will have to be repeated. Soil degradation must be prevented, not just remedied. Soil degradation results from agricultural systems which oppose soil processes. Soil degradation can be reversed and a profitable agriculture developed by linking agricultural systems more directly to soil processes and characteristics. Soil conserving systems will reduce risk in agriculture. The approach is summarized as RIMED.

R: Resource based system. Optimize the use of unique resource characteristics, keeping in mind that the main agricultural resources are soil, climate, and people. Ensure that political policies are in harmony with resource conservation.

I: Integration of the agricultural system. The goal should be agriculture and its effective use of resources to generate a finished product. Don't restrict the goals to short term commodity production. Avoid the narrow parochialism associated with commodity-oriented thinking.

M: Market development. Essentially product development. Requires a vigorous value added effort and market creation or import replacement drive. Creates broader opportunity base for primary production and hence greater opportunity to benefit from unique resource characteristics.

E: Education of the public, and of producers; with improved primary, secondary, and post secondary resource-based educational programs. Requires public awareness that their livelihood depends on, and that their actions influence, soil quality. Testing/ Demonstration of integrated systems is needed together with more complete Soil/Land inventory data for each farm, more agroclimatic data and their interpretation, and improved data on the interrelations between soils, plants, and soil-plant manipulations. University education and research must examine the interrelations among components of agriculture. The soil as a functioning unit must form the basis of this development.

D: Diversification is a characteristic of stable systems. It helps reduce risk and optimizes use of diversity in the resource base. An essential outcome of an effective soil conservation system requires innovation and imagination together with sound research.

Food processing - a growth industry

Development: the influence of research and technology

William Ballantyne

The fact that the title for session "B" states a conclusion and does not ask a question suggests the manner in which the organizers of this conference expect the subject to be treated. I too believe that growth and development in food processing are possible and can be profitable in Alberta in the next century.

My view is to agree with the opinion that for the next few decades Canada, and especially western Canada, will have to depend less on petroleum and mineral resources and more on agricultural resources and high technology manufacturing as the engine of development. This is mainly so because too much of the rest of the world and especially the developing world need the foreign currency gained by export. It takes fewer skills for a nation to produce and export petroleum and mineral resources in a competitive and comparative sense than agricultural and food products

Countries such as Russia, Mexico, Nigeria, Indonesia, etc., will all have to produce oil at any cost. Agricultural processing is not something they appear able to do so easily and perhaps is the best evidence that our food production and processing system is technically very sophisticated and highly complex. It is the end result or user of much of what biotechnology, genetics, nutrition, electronics, systems engineering, transportation and international banking are all about.

I also agree with the view that there are many more jobs per invested dollar in agricultural processing than in most alternate investments. By this, I do not want to imply that petroleum and coal are not going to play a central role in Alberta for the next century. However, if development at the least cost and on significant scale is the objective, then agricultural processing is our primary alternative.

Caution should be used in equating just the jobs on the factory floor with economic benefit. With healthy growth most of the jobs are on another floor. A major aspect of development policy must be to integrate the opportunity for economic spin-offs provided by agricultural production and food processing with opportunities in equipment

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- manufacture, transportation, marketing and financial services, ingredients and materials development, etc.

Some important qualifiers - many of which may be discussed more fully by following speakers - will influence the type of development we might expect. The population of Canada and the U.S. will not be eating much more in an absolute sense in the next decades. Growth in Alberta must come through transfer of processing from other regions and the development of markets outside the current marketing sphere.

We are, of course, moving no closer to heavily populated alternate markets. Almost as an aside but impacting on this reality is the double negative caused by our recent urgency in double tracking to Vancouver. This action takes away raw materials at even lower cost for others to process and subsidizes our own economy in a way less likely to create economic spin-off at home.

It is unlikely that research and technology will have a significantly positive impact on the transportation aspects of moving processed food products to distant markets. Filling returning trucks to south western U.S. states and piggy-backing to central Canada are "givens", with a shift for us to a southern flow. There seem to be few transportation technologies on the horizon that will affect our comparative cost of accessing markets.

The fact that Alberta has a small population and that even the regional market is widely dispersed also sets the boundaries for the type of development possible. Most secondary food processors that have either some exclusiveness to a product line or through marketing can generate such a perception are going to locate their manufacturing plants near their major markets. Their plants are usually very large, contain unique equipment and depend upon cost-efficient processing and distribution. The natural location for such processors is central Canada.

Of key importance then, is the maintenance of the current processing base, an upgrading or adding of more value to our processing efforts, and the transfer of processing from other regions. To do so requires an adequate supply of competitively priced raw materials and a reduction or minimization of barriers to interprovincial and international trade. All the technology in the world is useless without market access and competitively priced raw materials.

Probably 90% of all the agricultural processing taking place in this province involves the processing of primary commodities: meat, cereals, oilseeds, milk, feeds, vegetables, alfalfa, honey, etc. It is our reality. The easiest way to significantly develop the food processing sector is to expand these commodity processors.

Now, back to the question. How critical is research and technology to the expansion and development of food processing? As part of the answer it has to be noted that no Alberta processor is large enough to conduct fundamental research on its own. No processor can afford the risk or time involved in truly basic research. However, this is probably not very critical. Most patents granted in food processing never lead to commercial application on their own. There is, in fact, really very little absolutely new technology in food processing. Things like irradiation, the retortable pouch, controlled atmosphere packaging and mixed curing of meats are all new technologies of the past 40 years. Making them applicable or even relevant at firms such as General Foods, Swifts, Kraft, Unilever and other very large food companies with large research groups has taken years and not always been successful.

Of greater significance to Alberta processors is adaptation, modification, adjustment and commercialization under our circumstances and needs. Most processors must continually change a product form, create a more functional package, simplify a process. This is innovation at most firms. It represents the least risk as it requires a minimal selling job to wholesalers. retailer's and consumers. It is the policy of "being a smart second" but is a reasonable alternative with many technological developments.

There is a misconception that primary processing does not change from a technological perspective. While this may be true in some areas, it is not true for most commodities. Even the processes such as slaughtering hogs, pasteurizing milk and extracting oil change with time. Another misconception is that secondary processing is in some way technologically more complex than primary processing. This also is doubtful.

There is also a belief that large firms with elaborate R & D departments are at an advantage compared with small firms in terms of technological development. However, most new products and many processes of the last decades were developed by small firms that were able to adapt technologies to meet their needs. In many situations the development may simply have been a way to obtain superior cost competitiveness or consistency of quality from processes that are essentially the same for the whole industry.

Perhaps how well a processor is aware of market needs is the most important factor in the profitable development or adoption of new technology. Transferring the research from a multitude of sources to the processor that may have very limited technical skills in any area will become of more concern in Alberta in the next decades. Fred Wolfe will be discussing the specific transfer of technology later in the conference. However, I want to note that new technologies are now carried around the world very quickly.

It is the capability to interpret, transfer and install new technologies that will be a major determinant of which firms and even which countries succeed in the next decades. Canada has only had spotty successes in the past. Policy makers are certainly aware that we have not always done a good job of integrating the basic developments of research, often performed in public institutions, with the processing and marketing needs of the manufacturing sector.

Certainly, governments and universities have been effective in assisting the suppliers to agricultural producers and producers themselves in making dramatic improvements to agricultural production productivity. It is now time to concentrate on doing the same with the processing sector. It is worth noting that Alberta processors probably have better marketing skills than technical skills. One should not get too far ahead of the other.

My last point about the influence of research and technology is to emphasize that one of the most important results from a growing food processing sector should be in the development of the services supporting the industry. This is where some of the most sophisticated jobs related to the food industry are found. Any plan to increase production and processing should include the opportunities possible for local equipment, ingredient and package manufacture; for development of marketing and financing skills; and for the creation of consulting expertise in a whole host of related areas. These suppliers will in many situations only be successful by treating the world as their market. In total, the secondary spin-off from a growing food processing sector can be as valuable as the processing.

Food processing - a growth industry

The changing financial environment

D.H. Mather

Mr. Chairman, Ladies and Gentlemen:

The financial environment in Alberta is indeed changing and changing rapidly. These changes will have an impact on all of Alberta industry.

The first area where rapid changes are occurring is in the banking environment. It's no news to you that Alberta has lost the services of two regional banks, which were based here, and each of which to a degree was involved in financing secondary industry in Alberta. Their demise means less bank lending capacity in Alberta.

The problems of Western Canada resulting from the recession of 1981 and 1983 are contributing to the unwillingness of national bankers to participate in Alberta's economy to the extent they used to several years ago. Recently I attended two business conferences which in the past had attracted representatives from most of the banks active in Alberta. There wasn't a banker to be found at either conference.

This situation may not be all bad. In the past we, in Canada and in Alberta, have relied too much on bank credit to finance the growth of our businesses. This heavy reliance on bank finance has been the direct cause of the failure of many firms in recent years. The survivors have learned a lesson and that is not to make aggressive use of debt in general and bank credit in particular. They have learned to heed the slogan "To operate aggressively one must finance conservatively".

The other area where there are rapid and substantial changes taking place in the financial environment in Alberta is in the availability of equity capital. The supply of equity capital to finance Alberta secondary industry has increased substantially in recent years and in my view will increase substantially more in the next two or three years. There are three events which need to be mentioned:

1. The first was the creation of Vencap as an Alberta based and Alberta focused venture capital company, in October, 1983. More about Vencap in a minute or two.

Mr. Mather is presently President of Vencap Equities Alberta Ltd.

2. The second event was the establishment of the province of Alberta's Small Business Equity Program in 1984. I understand from my friends at Tourism and Small Business that over $40 million of equity has been invested by so-called small business equity companies (SBEC's) in more than 100 enterprises since the program commenced.

3. Finally, mention needs to be made of the very recent initiative of the provincial government which is to propose the creation of the "Alberta Stock Savings Plan" (ASSP) which will, if implemented, offer tax incentives for individual Albertans to invest in the public issues of the common shares of Alberta based companies. This program is modelled on a similar program introduced some years ago by the province of Quebec. The Quebec initiative has substantially increased the flow of new issues from Quebec companies. Under previous conditions these companies were not mature enough to attract equity from the public marketplace.

I don't have time for more than a short commercial about my own company, Vencap Equities Alberta Limited. Let me simply say that Vencap is a private sector venture capital company at arms length from the provincial government. Vencap is not a crown corporation in any sense of the word, nor does the provincial government have any arbitrary authority over what we do. We do have some generous financing from the Province of Alberta and in return for this generosity have undertaken, while we remain indebted to the province, not to invest in areas which are well served by other investors. There are three of these:

- oil and gas exploration and development;
- banking and finance;
- real estate development.

We have also promised to focus our attention on projects of particular interest to Alberta until such time as we can pay back the government the money we have borrowed.

We seek to help able entrepreneurs build major enterprises from small beginnings. We seek to back people as opposed to ideas. We don't control the enterprises in which we invest. We participate on a minority basis and work to assist the managements of the companies in which we participate to build their business.

Vencap has just celebrated its second birthday. We were born October 12, 1983. In two short years, Vencap has placed over $52 million in 19 Alberta based ventures. We have been aggressive investors as can be seen by the fact that Vencap currently is accounting for approximately one-third of all the venture capital activity in Canada in spite of the fact that our focus is on Alberta which accounts for less than 10% of the nation's population.

Just over 43% of Vencap's venture capital portfolio is agriculture oriented. Vencap is committed to investing $17 million in the Biotechnica International Groups of Companies, a large part of which will be applied to starting up and developing a bioengineering company in Calgary to focus on the development of superior crop varieties. In addition, five million dollars has been invested in a Brooks, Alberta-based agribusiness - Lakeside Farms. Lakeside will use Vencap's funding to finance the expansion and growth of the company.

Vencap seeks attractive projects with growth potential. Anyone here knowing of situations which they think might fit our terms of reference are encouraged to telephone us at our offices in Edmonton or in Calgary. I have brought with me copies of Vencap's shareholder reports which describe Vencap's aims and objectives and investment terms of reference. Also, I have copies of an ad which we are running currently listing Vencap's portfolio of venture investments. You are welcome to copies of each.

So to sum up, my short talk makes two points:

1. The financial environment in Alberta is indeed changing and will continue to change.

2. These changes are, on balance, positive ones. Sources of equity or ownership capital will replace sources of debt - chiefly from the banking system. The new financing of Alberta-based enterprises, therefore, will be much sounder than in the past and Alberta secondary industry will be much stronger as a result.

Food processing - a growth industry

What is the maketplace telling us?

By Dr. M. Heffring

Thanks Ken. My topic is "What is the Market Telling Us?" and I guess the first thing is that when you ask a question like that it assumes that you're listening, and I think the major problem today with Alberta companies and Alberta food processors is that for a long time they have not been listening to consumers. I guess the natural question is - why listen? Well I guess it depends if you've asked yourself a number of different questions.

For example:

- What new products should I be developing and introducing?
- How do I maintain the sales of some of my existing products?
- How do I get distribution?
- How do I reach my customers?
- How do we get listings in stores?
- How do I make sure I don't get de-listed from a store?
- Where can I get better margins, and how can I keep them?
- How should I advertise and promote?
- How can I not be one of the many "me-too" advertisers out in the market place today?
- What are the consumer hot buttons?

If you've asked yourself any of those questions then you should be listening very closely to what the consumer has to say, because when everybody today is looking at market share in the food industry I say that we're looking for "share of stomach". We're looking for that greater share of the food dollar from consumers.

Well, let's talk a little bit about Alberta consumers and consumers in general. What are they like? Well I've created a fictitious family, the Johnson family. This is Nancy and Bob, they're over 30, they've got 1.9 kids - that's their son Fred who's in college. Fred comes home on the weekends to have some meals. Nancy and Bob both work, they are very typical of a number of families today. They feel a lot of time pressure and because of that time pressure they are looking more and more to simple meals. Easy to prepare, pre-prepared foods. They're also doing a lot of

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Dr. Michael Heffring, Heffring Research Group, Calgary

take out. They're going to places that they like and asking to see if they can take the food home. They're also eating out a lot more often than they ever did. Up to one out of every 3 meals is being eaten outside the home and they've already been experimenting breakfast in the morning - the McMuffin - the croissants. It seems like the family has all different time schedules so they end up looking for smaller portions and greater variety to meet everybody's needs. They seem to have or they think they have good incomes but the money never seems to go as far as they think it should. So what they end up doing is saving on a lot of basic items in their grocery list so they can splurge on some of the ones that might be more interesting, particularly gourmet foods and desserts. They're looking - although price is important to them, they're looking very much to value, quality is important to them. Coupons and deals - they're getting them every day from all sorts of sources and they're now some of the great closet coupon users that actually don't admit publicly to using them but are using them quite a bit and trade with their neighbors. And they do it because its a smart thing to do. There have been so many deals going on at all the different stores that they're totally confused as to what the regular prices are and what the sale prices are. They're trying lots of new products. They've been told that in the next 5 years 80% of the products that will be on their shelves have not been invented yet, so they're curious and they're trying. They have an interest in this variety. They're experimenting. They've tried Mexican and Italian. Bob has had a few bad experiences with Mexican food, but he figures it still adds a little "spice to their life". They've decided that convenience during the week is the way they are going to take most of their meals, because they're so hurried. But on the weekends they've decided to experiment and spend more time cooking gourmet meals. However with all the new products they're getting confused as to which brands they should buy. They heard about the fitness craze and they've tried the 20 minute workout - at least 10 minutes of it. They're on their 5th diet, they eat to win but they still don't know how they're going to lose. But they are interested in a lot of products, they've tried light products, they tried low fat products. They're finding they tried natural products. They're very interested in nutrition, they're reading labels, they're very careful on the code dates. They find that the natural products are very interesting but they don't last very long and they are wasting a lot of product. For all this concern in health and looking at their weight they're human and they slip a lot. They're very interested in indulging in foods, they still like their steak and potatoes covered with sour cream - they snack, they do a lot of the things they're not supposed to do, but they feel that because they're eating some light foods that means they can eat some of these indulgent foods as well. They also eat foods to reduce the stress that's involved in their day to day work. They've also re-discovered their sweet tooth - you can see them late at night huddled over a nice pint of Haagen-Dasz or eating a lot of specialty chocolate items. They've been trying the superstores. Its hard to resist all the advertising on price and selection but after using them for some time they find that they're missing the friendly service and the selection of the some of the smaller stores. So what they've decided is that for the majority of the products that don't have a lot of specialty items involved with them they will go to the superstores but they will still go to farmer's markets and specialty stores on weekends. They've also found that a few years ago 80% of all the products they bought were all national brands, but now their stores particularly their big superstores don't always carry them. They're trying more generics. They're saying the quality is o.k., but I'm saving a lot. They also notice a lot of their old brands are no longer in the stores they go to. The manager says they aren't moving fast enough. They don't really understand what that means. There are lots of new ones coming up to replace them but they're not sure they are going to be around any longer. They also find all the packaging begins to look the same. Overall Nancy and Bob and the family are eating pretty well, they feel they're getting pretty good value. But they still say, they don't want to spend much more a month on their food bills. That's a typical view of a very large group of consumers in Alberta today.

The real question is what does that mean for the people in the food processing business. What I want to show you is some of the trends that that translates into if you're a food processor.

In terms of **products** and most of you who are in the food processing business either have products or will be producing new ones these are the things we are seeing more and more of and will continue to see more of in the future based on listening to consumers.

- There will be a continued search for variety, new foods, new packages, new designs.
- There is less brand loyalty.
- Lighter, smooth - lighter and smoother taste, the taste of consumers today are changing.
- Less bitter, lighter, smoother tasting. If you look at, for example, in the beer business, Labatts over the last 5 years knew this was happening and each year they would change the taste of their beer a little bit at a time to make it seem lighter tasting.
- Light foods, diet and low fat.
- We've got indulgent foods; those are the chocolates, the sweet tooth, and that's compared with health foods.
- Convenience versus gourmet; a continuing interest in products that are easy to prepare, easy to serve versus ones that take a lot of extra time on the weekends to prepare.
- More fish, poultry, fruit, vegetables and beverages.

As most of you are aware there is a beverage revolution going on out there. One of the people I deal with in the juice business and I took all the products that were in the orange juice or orange drink business and we had over 25. How does a consumer decide?

- More prepared and frozen foods.
- Ease of preparation.
- And more take out.
- What about the price?

- How are people seeing price? More price sensitivity and deal provenness. Consumers are spending more time reading the newspapers comparing prices.

- More cherry picking - what cherry picking is, is that a lot of stores have decided that they will give special deals, consumers are very knowledgeable now, they'll go right into the stores find the low priced item, pick it up and they will leave. People are becoming more sensitive to what a good deal is and what a bad deal is.

- There is a confusion over regular versus sale price. What is the price that I'm suppose to be paying?

- There is more bulk buying to reduce prices. People are saving on standard products to free up cash for more exotic products and that is why a lot of them are buying generics.

- There's a willingness to pay for value added products and it's a great opportunity to get margins - that is if you can add value to the product, particularly in areas that have to do with convenience or reducing preparation time.

- Consumers will pay for that difference.

- There is also a willingness to pay for healthy or gourmet foods and diet foods. When we talk to consumers about diet food they automatically expect them to be higher priced.

What about **packaging?** This is probably the single worst thing that food processors not only in this province but in any province do.

- It is your silent salesman. You do not have a lot of money to spend on advertising. A lot of the money you do have in promotion will go to the trade, so what's left is your package.

- People are reading the labels more often and reading the ingredients.

- They want to know what's in this product, and what is it, why should I use it?

- More visible package designs are needed to create shelf impact. The average consumer comes in and it's just a blur of package designs. How can they tell your package versus somebody else's?

- More focus on code dates. Do you ever watch people now go through and look at code dates? It's nice to see people are, even on the resealable ones - they are now. When we watch them in stores they are actually peeling up the cottage cheese film and looking inside just to make sure the code date is correct. It's really nice to know that. So by the time you got it the code date is irrelevant.

- More single servings. Interestingly enough when we find the people that are using single servings it turns out that it's large families because of the need for individual portion control.

- Resealable containers. More compact and easily stored products. Kitchens are not as big. Houses are not as big.

- Boiling bag products, microwave products, more prepared and frozen products and a greater interest in having portion control with the products that they're buying.

What about **promotion**? Well obviously people are more interested in promotion, particularly coupons.

- I don't know if any of you have been to a coupon party if any of you saw Mr. Mom the movie, you saw the poker party going on, that is a typical thing going on and there are a lot closet coupon people out there. I'm sure there's a lot in this audience who don't want to admit that they use them a lot. More interest in samples.
- The great interest in new products has been I want to try it before I buy it, so sampling is really important as a part of your program.
- Better informed consumers. Consumers today are much more knowledgeable, it's harder to fool them. They want the straight goods and advertising.
- There is more clutter than neat to advertising, it's extremely difficult for consumers today to tell the difference between brands. You have to ask yourself why am I different and why am I different in a relevant way? There is just too much clutter.
- The last one is more cross selling and piggy back promotions, you'll continue to see consumers buying products that have been paired together. Potato chips and potato dip, and cross selling and cross categories.

Distribution

- Superstores versus specialty stores, that polarization will continue. The large stores where people do a lot of their shopping versus the specialty stores that give them some selection and better service.
- Full serve versus self serve, you'll continue to see that mix between helping yourself and someone helping you. You go - versus they come.
- The whole area of direct marketing, one of the biggest problems today with food processors is they can't get distribution. Direct marketing of your products to consumers is one of the great growing areas in marketing.
- More concentration results in consumers believing they have less choice. A lot of consumers today don't believe they have the choice they did some years ago. When a lot of these people are promoting selection in the big stores they say I'm still buying from that store.
- There's also though, a greater interest in "one stop shopping", trying to do everything at one time, because of the time pressures.
- There are also more places to purchase food. You'll continue to see more outlets trying to sell food. The obvious ones are the food marts at gasoline chains; one of my clients is Shell and they've committed themselves in a long term to food stores.
- You'll continue to see a lot of new outlets come up. A lot of people will be in the food business and food distribution. These are all alternatives.
- The last area is **service**. This will become a key feature of marketing in the food industry in the next 10 years.

There's an increased interest in personalized **service** and customized products.

- Also you'll notice that a majority of stores have cut back in staff which has resulted in poorer service.

- The staff that is there is overworked and undertrained which results in poorer service.

- The whole area of services and being able to market services is an added value feature of your products will be a major marketing tool in the future. Those are just some quick trends and some of the implications from areas you have to decide as a food processor.

So what is the market place really telling us? Well, what it is saying is:

1. Listen to me, but be innovative.
2. It is also saying make sure your product solves the problem for me that I can't get through other products.
3. Make sure you offer me a real difference.
4. Make sure you offer me a real improvement.
5. Give me good value and perform consistently for me.

Remember if you're not listening to your customers then you're probably talking to yourself.

Thank you!

Food processing - a growth industry

A look at private sector and government development activities

Barry Mehr

In being asked to participate in this workshop addressing the subject of private sector and government support for development initiatives, I was forced to take a long hard look at where we've been in the past decade, where we are now and where we are headed.

I believe our agricultural industry is now refocusing itself toward a future which departs from our recent past. We needn't think in terms of totally throwing our past experiences out the window. The basic production and processing resources in Alberta are strong and we can be confident that the future will find our industry producing, processing and distributing products much as they have in the past. But the new markets, the incremental gains from where we are today will be much harder won, more selective and probably tougher to maintain than in the past. This suggests to me that we must plan and manage much more carefully and that we should all be pulling in the same direction. To me this also suggests that support services to that agricultural industry must be a 'best-fit', selective, and in the main help industry efficiently tackle the marketplace, develop and adopt new technology, extend production and in-plant efficiency -in short - do all the essential things necessary to compete outside our own boundaries.

Tackling those outside markets causes us to look at other production, processing and distribution systems and glean the efficient parts for our own use. We must be exposed to their methods of operation if we ourselves are to integrate the efficient modes of operation which make our competitors effective.

I am personally encouraged that much of that is ongoing in Alberta. In recent times we have seen more firms than ever exploring new technology, new products, potential markets, and ways to pull it all together. As Mr. Harowitz referred to in his address to the plenary session yesterday and Michael Heffring today, a number of market niches, available for the small to medium sized firms, continue to emerge from the mosaic of our agri-food industry.

Speaking for the department which delivers the programs designed to meet your industry's needs, I can tell you that we recognize the

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Mr. Barry Mehr is the Assistant Deputy Minister of Agriculture, Alberta Agriculture.

individual needs of firms - and given the limited technical, supportive, and financial resources we have available - we are becoming more selective and focused in our programming. Let me just briefly run through some of these programs, how we are directing them and how flexible they can be.

Federal and Alberta Programs to Assist Agri-business

FEDERAL

Program for Export Development - agriculture, fisheries and food products (PEMD - Food) - Financial

This program provides financial assistance to Canadian companies, producer organizations, marketing agencies and industry associations who wish to develop new export markets for agriculture, fisheries or food products. The program provides funds for such projects as specific project bidding, market identification, participation in trade fairs, helping with incoming foreign buyers, formation of consortia and sustained export market development activity. Some of these grants are repayable.

Export Development Corporation

The EDC is for Canadian companies paying taxes in Canada and marketing goods with a minimum of 60% Canadian content. There is special emphasis on the needs of the small exporter and there is no minimum value of export business to qualify. The EDC provides insurance, guarantees, and financial services such as loans and lines of credit.

Business Opportunities Sourcing System (BOSS) - Technical

The purpose of this program is to provide an authoritative data base on Canadian companies, their products and the markets they serve. This system gets buyers together with the appropriate sellers.

Federal Business Development Bank (FBDB) - Financial/Technical

The purpose of FBDB is to help the establishment and development of business in Canada. They do this by way of loans, loan guarantees, equity financing or a combination. The bank also offers small business management seminars focusing on such topics as arranging financing, cash management, marketing, human resource management and cost control. Also offered is the counselling assistance to small enterprises better known as CASE. This program uses either retired owners of small businesses or retired business managers and executives. They counsel small businesses on various problems.

Technological Awareness Program (TAP) - Technical

The purpose of this program is to provide technological information to industry by means of distribution of selected reprints of scientific articles.

Interfirm Comparison Program - Technical

The purpose of this program is to help individual companies to determine on a strictly confidential basis, how their productivity and profitability compare with the competitors, why they are different and how they can be improved.

Small Business Loans - Financial

The purpose of this program is to provide short and intermediate term credit to small business. Under this program a business can apply directly to its banker or another approved lender for a guaranteed loan of as much as $100,000. The rate is fixed at a maximum of 1% above prime.

The Financial Planning Program - Technical

This program is offered by the Federal Business Development Bank to assist businesses to obtain financial support in the form of loans, investments, or grants. The bank provides a financial match-making service by bringing business people with money available for investment together with business people seeking funds. As well the bank provides programmed do-it-yourself kits. These kits have been prepared on topics of particular interest to present or potential small business owners/operators who have to look after many aspects of the business themselves. As well the bank refines package potential proposals, whereby the bank's project development team will undertake an analysis of an existing or proposed business and will prepare a report to be used by financial institutions or government agencies.

Machinery Program - Financial

The purpose of this program is to enable industry to purchase non-Canadian machinery at the lowest possible cost. The program provides for the remission of duty on machinery imports for a value of more than $500; the first $500 value for duty on the machinery in any one application will not qualify for remission.

ALBERTA

Market Development Assistance Program - Financial - Alberta Economic Development

The purpose of this program is to expand export sales for outside of Alberta. Under this program, financial assistance will be provided for out of province exposition; incoming buying and outgoing sales missions; market identification trips and other market development activities.

Trade Development Program - Financial - Alberta Economic Development

The purpose of this program is to assist in the development of export sales by companies located within the province.

Small Business Counselling - Technical - Alberta Tourism & Small Business

The purpose of this program is to assist Alberta industry and small business. The program offers business counselling, small business guides, business site location program and management assistance program.

Market Development For Agricultural Food Products - Financial - Alberta Agriculture

The purpose of this program is to provide financial assistance in the development of markets for Alberta's agricultural commodities, processed products and technical services, locally and in most world markets. The program provides grants for the following activities:

- international exhibitions and trade fairs
- incoming buying and outgoing sales missions
- market and feasibility studies
- other market promotion and development activities

Nutritive Processing Assistance Program - Financial - Alberta Agriculture

The purpose of this program is to provide assistance for nutritive processing capital projects and research nutritive products or processing. This program is in the midst of being rewritten.

Processing Development Assistance Program - Financial - Alberta Agriculture

The purpose of this program is to increase the quantity and quality of processed agricultural commodities within the province. The program offers grant assistance in the following areas:

- technological awareness
- product/process development
- product and packaging development
- food processing development

Alberta Opportunities Company (AOC) - Financial

The purpose of AOC is to provide money where conventional financing is not readily available, particularly for small business in small communities. AOC provides loans as it is a lender of last resort. It also supplies loan guarantees and money for inventory financing.

Small Business Equity Corporation - Financial - Alberta Tourism & Small Business

The purpose of this program is to stimulate the formation of pools of equity capital throughout the province. Small Business Equity Corporations are created for the private investment of at least $100,000 and not more than $5 million in the case of a private companies or $10 million in the case of public companies. The government will then give the investors a grant equal to 30% of the money in the Small Business Equity Corporation.

Product Development Program (PDP) - Financial - Alberta Economic Development

The purpose of this program is to provide financial assistance to Alberta manufacturers who wish to develop new products or improve existing product. The program provides financial assistance to a maximum of 75% of the eligible costs. The program was designed to cover projects not normally exceeding a total cost of $30,000.

Alberta Research Council Aid Program for Small Business - Technical

The purpose of this program is to provide technical aid to small or medium sized businesses. The program provides for:

- laboratory testing and consulting in the areas of mechanical engineering, industrial engineering, chemical engineering, and chemistry, food science and electronics.
- an information retrieval service for international data bases.
- an onsite evaluation of problems of plant layout, material handling, product costing and other technical and operational problems.
- liaison with government and private resources which could be helpful to the small business owner.

Agricultural Development Corporation (ADC)

ADC acts as a lender of last resort to Albertans involved in the agricultural industry who are unable to obtain funds from conventional lenders under reasonable terms and conditions. ADC offers loans to agri-business both in the form of direct and specific guaranteed loans. Direct and guaranteed loans are made for land, permanent improvements, financial reconstruction, machinery and equipment, and mobile equipment used on site.

Alberta Food Processors Association

The Alberta Food Processors Association is a non-profit society registered under the Societies Act of Alberta. It is governed by an elected Board of Governors which includes 7 industry and 2 Alberta Agriculture representatives. Members are companies involved in processing and production of Alberta food and beverage products. Alberta processors collectively work together to identify their products to Albertans. This is accomplished through a multi-faceted program. All programs are interrelated by our logo "Better Buy Alberta". Most programs match the processor dollar input on a 50:50 matching basis.

Marketing Seminars

Seminars were initiated in spring, 1985, for all food processors in Alberta. Topics of a three phase pilot program are: 1. Developing a Marketing Plan. (Spring, 1985) 2. How to Price and Distribute Your Products Successfully. (Fall, 1985) 3. Effective Ways to Advertise and Promote Your Products. (Spring, 1986)

Provided at no cost by Alberta Agriculture - Marketing Services Division.

Another program of interest (non-government) may be: **Vencap Equities (Alberta) Limited**

The purpose of Vencap is to provide venture capital to Alberta based companies or companies that provide benefit to Alberta. Minimum equity participation size is $500,000 with a maximum equity size of $10 million. The prime criterion is potential profitability but also considered are management, market advantage, planning and any agreement must provide for equity take out. In exchange for funds, Vencap usually obtains a minority shareholder position in the company (averaging around 30%).

I am going to take advantage of this opportunity to issue a few challenges.

We must become more sophisticated, professional and planned marketers and salesmen. We must use messages from the marketplace to direct our industry development. We must identify our market horizons, anticipate the needs and produce to meet those market demands.

We must target our markets. In Alberta's market plans we have identified our own home (Alberta) market, the British Columbia market, the western United States, including Alaska and Hawaii, Mexico, Japan, Korea, China, Taiwan, southeast Asia and, eventually, even the eastern portion of the Soviet Union as the natural market target areas for our product. Strength in these areas includes finished food products, genetics - both plant and animals - technology, crop and livestock production as well as food processing technology; distribution and marketing expertise and assistance. There exists a potential for huge quantities of products and services that would allow for the further development of the Alberta agri-food industry's long-term viability.

We must be flexible yet know where we are going. We must set our targets and work to them, not letting the traditional Canadian inferiority complex prevail. We are good and significant world traders and we can be the best if we all roll up our sleeves and go to work. If we don't aspire to this position in the world agri-food industry then all of us will suffer because of the lost contribution of our industry to our economy.

The key is for us to target on a market oriented basis, keeping foremost in our minds our agricultural production limitations because of our environment. Today's limitations obviously become the challenges for our research sector and tomorrow's limits then become significantly reduced. We require a co-ordinated Alberta approach to research, production, extension, processing, marketing and distribution priorities throughout our agri-food system.

And one last point - it is critical that we pursue a free trade/liberalised trade agreement with the United States. Our penetration of the United States market for agriculture and food products is significant. Except for the cereal grain sector, when you look at the U.S. market, it is usually the number one export market for Canada's variety of agricultural products. In free trade discussions let's be prepared to put everything and all products on the negotiating table - again, why be timid - let's get aggressive. We have a sophisticated trading base which we have developed, we can negotiate from strength. The U.S.A.'s growing protectionism means that the status quo is not an available alternative, therefore, let's face up to that fact and be willing to sit down at the table and discuss how we can liberalise trade to our mutual advantage, in all product categories throughout the agriculture food industry.

If we are to maintain and enhance our agri-food industry, we must throw out our inferiority complex and work together as governments, industry and labour in a planned, co-ordinated, sophisticated and aggressive fashion so that we will maintain our traditional markets and achieve our full potential through pursuit of as many of the future markets as is possible.

On behalf of Alberta Agriculture I will pledge our support to continue to assist you in as meaningful and efficient a way as possible en route toward those objectives.

Farming for profit with human resources

Management of stress can increase farm profits

Lilly J. Walker, Ph.D.

The past decade has been a particularly challenging and trying time to be a farmer. The combination of economic conditions and weak markets for agricultural products has provided a significant source of economic distress for farmers. The extent of the economic distress being suffered by farmers is revealed in recent bankruptcy statistics by the Consumers Affairs Department. A record number of 551 farmers underwent bankruptcy in 1984, compared to 488 in 1983, 410 in 1982. Farm foreclosures are at a record level and 22% of the farms serviced by the Federal Farm Credit Corporation are on the verge of failure. A national survey conducted by FCC in the summer of 1984 suggested that 39,000 of the nation's 228,000 farmers are in moderate to severe financial difficulty.

A vivid source of evidence for the considerable levels of stress currently present in the farm environment comes from farmers themselves who are sharing personal anecdotes of insomnia, ulcers, tension headaches, family conflict and are requesting stress management workshops in order that they more effectively learn to cope with their stress. A recent study by Ontario Dept. of Agriculture of farmers' needs in Ontario reported that 45% of all submissions dealt with stress. No segment of today's rural society can escape the stress brought on by financial conditions, changing technology, and the rapid and dramatic changes in lifestyles and family structures.

In contrast to most other occupations, farming continues to be largely a family-operated activity. Despite technological advancements, increased production, marketing boards, increased farm size and reductions in the number of farms, success in farming in Canada depends upon the management of the family resources. The human resources of the family farm determine success and survival.

Farming is a unique business with specific characteristics which are linked to tension and stress. Characteristics which differentiate farm families are: multigenerational family members often work together on a common enterprise; farmers experience wide seasonal variations in

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work requirements; farmers' income is irregular and unpredictable; the occupation of farming requires a substantial cash investment and farm families are relatively isolated from support systems and services. Major sources of stress for farmers come from economic issues and relationship issues. Researchers (Kohl, 1971,1976; Rosenblatt & Anderson 1981) have surveyed large numbers of farmers and report that the economic stressors are related to financial management problems which are due to restricted cash flow and the increased capital investment needed to maintain the increased size of farms. The interpersonal or relationship tensions are related to the mutual dependence involved in a family farm operation, the authority and control issue in a multigeneration operation, the risk of too much togetherness and the need for family decision making.

It appears that rural women are particularly vulnerable to physical and emotional stress because of the sustained role conflict they experience as they strive to integrate their home and occupational spheres and their role as the family mediator and counselor. More specifically, Hedlund and Benkowitz (1979) reported that 35% of the farm women they interviewed experienced stress symptoms and identified worries about debts, time conflicts between child care responsibilities and farm work, arguments with husband over the wife's role and budgeting problems, as sources of tension.

It is evident that stress among farm women is related to a complex set of factors. Researchers in North Dakota have identified that farm women who are not involved in the decision making, those who have two or more children under the age of 14 and older farm women have higher anxiety levels, more depression and greater amounts of anger than farm women who share in the decision making, or those who do not have to juggle the mothering and worker roles. It is apparent that the extent of farm, home roles, the role conflict between home and farm roles and the presence or absence of support from significant others can affect stress levels in rural women. In workshops conducted with rural Manitoba farm women we have found that farm women are often the sole support system for their male partner; - they help him cope with his stress as well as striving to cope with their own. In other words, they carry a heavier emotional load.

What is stress? Fundamentally stress is any demand placed on the human mind and body. Stress is a physiologic response to all experience. The body reacts to stress-producing situations, or stressors with a series of changes in body chemistry - glandular reactions that result in sudden increases in pulse rate, blood pressure and blood sugar. Hans Selye has outlined the 3 stages of the body's reaction to stressors: Stage 1 - Alarm reaction. This response is often referred to as the fight or flight syndrome. Your whole body has become alert and ready to respond. Stage 2 - Resistance stage. If you continue to be exposed to stressors, your body begins to resist and your body system remains hyped up and never returns to baseline levels. (eg. your blood pressure may rise and stay elevated). Stage 3 - Exhaustion. Following long-continued exposure to the same stressor the body's adaptation energy is eventually exhausted and the signs of the alarm reaction reappear but now they are irreversible and the individual dies. Selye has demonstrated that longterm stress or the chronic presence of stress related hormones in the body eventually reduces its ability to resist disease. The immunological system begins to wear out.

What are the costs of stress? Researchers have noted that among farmers, stress impairs decision-making and increases the probability of farm accidents. Chronic stress is associated with the major killer diseases, cardiovascular disease (heart attacks), hypertension, and cancer. Stress has recently been linked to immunological functioning and researchers believe that vulnerability to infectious disease may be affected by how people react to stress in their lives. Ulcers, diabetes, allergies, skin disorder, colitis, backaches and headaches are common results of excessive stress. Psychological symptoms of stress are impaired concentration, lowered productivity, sleep disorders, teeth grinding, irritability, worry, frustration, mood swings, chronic fatigue, sexual problems, forgetfulness and family conflicts. (40% of all marriages in Canada end in divorce).

Stress can be positive or negative. Generally, your body doesn't differentiate and reacts only to the intensity of the demand made upon its adaptive capacity. Certain emotional factors, (eg. frustration) cause distress which produces very specific negative effects on the body, particularly when it is sustained over a period of time.

Individuals respond differentially to stressors. The relationship between stress and illness is moderated by the way individuals cope with stress. Effective stress management involves three stages: I. Becoming aware of your stressors and your stress reactions II. Developing coping strategies and III. Practice.

Many farmers are currently realizing that the farm asset they have most neglected is the human producer as stress causes illness and loss of productivity farmers are more cognizant of the value of stress management. Effective stress management involves three stages: I. Becoming aware of your stressors and your stress reactions II. Developing coping strategies and III. Practice.

Becoming aware

Farmers report that events they perceive as common stressors include personal issues, relationship issues, work issues and environmental issues. (Table 1). Some of these stressors occur more frequently than others and appear to be habitual stressors (i.e. daily hassles, weather reports, market reports). Others are major stressors that cause an intense emotional and physical reaction (death of a partner, loss of crop, major equipment loss.)

Becoming aware of your stress involves recognizing your stressors, having the courage to admit you are experiencing stress and expressing your stress in productive rather than nonproductive ways. This can be a difficult step for those farmers who view themselves as rugged individualists or martyrs who suffer silently. These types of farmers are unable to talk about their feelings and are prime candidates for stress related diseases. In all the workshops we have discovered a common belief of many farmers is that a strong person doesn't express feelings. This belief causes stress. In reality, the strong person is the person who can admit his feelings, face his fear and communicate openly and directly about his concerns so that he can develop coping strategies.

The first step of effective stress management, Becoming Aware, includes recognizing your stressors, identifying your unique physical and emotional signals of stress and beginning to talk about yourself, your feelings and your reactions so you can analyse your life situation.

Developing coping strategies

Stress reduction may be accomplished in a variety of ways. Two approaches for coping with farm stress involve personal solutions and public solutions.

Personal coping strategies are actions you take on your own behalf to reduce the level of stress you are experiencing. There is no best method for coping with stress; just as your stressors change, so do methods of effective coping change. As you add to your stress-coping skills you add to your ability to cope. Diversity in stress management techniques provides you with more resources in time of need. Research on farmers' coping strategies indicates farmers overuse the negative coping technique of withdrawal and chemical release (i.e. alcohol). Farmers can benefit by adding to their current coping strategies new skills in the areas of family support, assertive communication, relaxing and management of self.

Public solutions to effective stress management include support groups, services and group courses. Farmers need support systems to help one another. Individuals cope more successfully when they have the support of family and friends. Support groups eliminate one of the major stressors farm families have; isolation which feeds solitary decision making. Support groups provide a discussion forum in which issues and feelings are shared equally. They are designed to help people understand their problems, explore strategies for coping with the stress of family farming in healthy constructive ways and support one another in creatively developing practical solutions. Services which can help farmers include telephone hotlines, psychological counselling services and more accessible health services featuring prevention of illnesses as well as treatment. Farms families desire and require more courses sponsored by the Department of Agriculture which focus on the effective management of human resources. The people resource, on farms is an often neglected commodity. Courses on stress management, decision-making, nutrition, time-management and family communication can help farmers develop personal skills which facilitate cooperative working styles for the farm family unit.

Practice

The final step in effective stress management is practice. As you gain skills and add them to your personal repertoire you insulate yourself against the negative effects of stress. Practice builds skills. Practice is your investment in your bank account of coping strategies. The more you practice a variety of strategies, the greater your ability to take control of your life.

If today's family farms are to succeed it is imperative that the major resource on that farm, the people resource, be more effectively managed. The farm family resembles the land - we can deplete it of its natural resources, until the family farm is no longer productive or we can invest in the farm family, nurture its growth and develop a more resilient, stronger family farm community.

Table 1. Farm Stressors.

Personal	**Family**
Personal injury or illness Change in financial status Change in view of self Change in roles and responsibilities Change in habits (alcohol, exercise, nutrition, drugs, tobacco, sleeping, social activities)	Death of a spouse New family members Separation/divorce Trouble with inlaws Conflict Parent-child tensions
Work	**Environment**
Loans of more than $20,000 Good crop Crop failure Low prices of commodities Machinery breakdown Readjustment in farm management (new crops; diversification, new helpers) Change in hours Bankruptcy/Foreclosure	Neighbors selling farms Natural disaster (drought, hail) Moving Remodeling Neighbors going bankrupt Seasonal changes Vacation

References

Berkowitz, A.D. & Perkins, H. Stress among farm women: work & family as interacting systems. *Journal of Marriage & Family*, Feb. 1984, 161-166.

Capener, H.C. & Berkowitz, A.D. The farm family: a unique organization. *Food & Life Science Quarterly*, 9(3), 1976, 8-11.

Cox, M.M. & Meeks, R.W. Information Needs of Alberta Farmers & Farm Families. November 30, 1983.

Dohrenwend, B.S. & Dohrenwend, B.P. *Stressful life events; their nature & effects*. New York: Wiley, 1974.

Hedlund, D. Berkowitz, A.O. Farm family research in perspective: 1965-1977 Rural Sociology Bulletin 79: Ag. Economics Research 78:18, Department of Agricultural Economics, Cornell University, 1978.

Hedlund, D. Berkowitz, A.O. The incidence of social psychological stress in farm families. *International Journal of Sociology of the Family*, 1979, **2**, 233-245.

Hertsgaard, D. & Light, H. Anxiety, Depression and Hostility in Rural Women. *Psychological Reports*, 1984, **55**, 673-674.

Kohl, S. "The family in a post-war frenetic society". In K. Ishwanran (Ed.), The Canadian Family. Toronto: Holt, Rinehart & Winston, 1971.

Kohl, S. The Farmer's Wife: Contradictions & Consequences of Women's Involvement in a Man's Domain. Paper presented at annual meeting of National Council on Family Relations, New York, 1976.

McGhee, M. Women in Rural Life: the Changing Scene. Ontario Ministry of Agriculture & Food, 1984.

Rosenblatt, P.C. & Anderson, R.N. Interaction in farm families: Tension and Stress. In *The Family in Rural Society* (R.T. Coward & W. Smith Jr. Eds.) Boulder, CO: Weston Press, 1981.

Wilkening, E.A. "Farming families and family farming" In Coward & Smith (Eds.), The Family in Rural Society. Boulder, Colorado: Westview Press, 1981.

Agricultural education — harnessing new technology

Engineering development and the role of agricultural colleges

Eric Jensen

Each year Alberta Agriculture runs a very successful conference in Banff called Managing Agricultural Technology For Profit. I have always liked that title because it says two key things about technology: 1) we should manage agricultural technology not be a servant to it and 2) new technology should make sense economically by reducing costs or increasing profits. Sometimes these basic guidelines can become obscured when we see the latest marvels of high-tech agriculture. We need to keep asking ourselves two key questions:

1. WILL IT WORK?
2. WILL IT PAY?

The role of agricultural colleges

I interpret the mandate of our agricultural colleges to be "to offer practical up-to-date training for young men and women who plan to work in agriculture either as farmers or in the agri-service industry". This mandate suggests that our colleges should be at the leading edge of agricultural technology providing an environment where students can evaluate the technology of the future. How could this be achieved? The answer lies in recognizing that new agricultural technology originates from many sources, including farmers, inventors, private companies, extension specialists, universities and research institutions. We need to develop a higher profile for new agricultural technology to encourage its commercialization. I suggest the creation of a Centre for the Demonstration of Agricultural Technology where the latest innovations in agriculture would be demonstrated and evaluated. This Centre would work closely with the agricultural colleges in Olds, Lethbridge, Vermilion and Fairview.

Researchers and innovators in private industry have expressed support for this concept. They see such a Centre providing an opportunity to demonstrate their technologies to local farmers and to the college students who will be the farmers of the future. Many

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companies are prepared to cost-share projects related to their innovations.

The benefit to instructors and students would be the opportunity to evaluate new technology before it becomes commercially available. The Centre would operate in close cooperation with college staff by offering field results for classroom use. The Centre would also become a popular attraction for farmers by hosting annual tours and demon-strations in cooperation with Alberta Agriculture extension staff.

Examples of new agricultural technology

Here are some of the technologies waiting to be demonstrated by private research companies:

1. New cropping techniques for soil conservation and salinity control.
2. A variable fertilizer application system that reads a nutrient map of a field and automatically adjusts the rate of nitrogen application to match variations in field requirements.
3. An electronic seed cleaner to remove frozen kernels from canola seed and wild oats from tame oats.
4. An integrated water management system for drainage, erosion control and wildlife preservation.
5. A low-cost trout hatchery.
6. A new zero-till drill.
7. A renewable energy farmstead.
8. New developments in solar and wind energy equipment.
9. Remote sensing for crop monitoring.
10. Computers and microelectronics.

These are only examples. There are many other potential categories.

Information services

The Agricultural Technology Centre would operate an information service where test results and the economics of each demonstration would be summarized. This is the key missing element in our present technology transfer system.

Summary

Alberta can become a leader in the development, application and export of new agricultural technology. The potential benefits are exciting; for innovators, farmers, students, and the total agricultural community.

Agricultural education — harnessing new technology

Farming for the Future and department extension program

James P. Mahone

I am very pleased to be taking part in this conference. It is my belief that Alberta's agricultural industry must develop and use new technologies to meet the challenges of the future.

One hundred years ago our challenge was a new frontier: the Canadian west. Today our challenge is a different sort of frontier: the rapidly changing world of new technology. It is crucial that we take on this new frontier with the kind of vigor and strength shown by the province's first farmers and ranchers.

Fifty-one percent of Alberta's population lived on farms in 1931. By 1981, only nine percent lived on farms. And yet we are able to produce more food than we ever have before. For example, annual average barley production in Alberta has increased over 1000 percent since the 1930s, average yield per acre of barley has increased 102 percent, and the average acreage seeded to barley has increased 525 percent. These increases are largely the result of advances in agricultural technology.

Alberta Agriculture is taking an active role in helping producers to meet future challenges. With programs like Farming for the Future we support agricultural research to discover new technologies and demonstrations to communicate these technologies to producers. Alberta Agriculture's research and extension personnel are an important component in the transfer of innovations from the lab to the farm.

Farming for the Future.... Alberta's major agricultural research funding program, has two objectives:

- to improve net farm income, and
- to improve the long-term viability of agriculture in Alberta.

This is achieved in two ways: the *Research Program* and the *On-Farm Demonstration Program.* Since 1979, the Research Program has funded agricultural research conducted by scientists in all commodity areas. Thirty-one million dollars has been awarded for 337 research projects, resulting in important developments such as crop varieties

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especially suited to Alberta conditions, improved agronomic practices and new livestock vaccines.

The *On-Farm Demonstration Program*, established in 1982, supports demonstrations to accelerate the transfer of new technology to producers. The Heffring study commissioned in 1983 surveyed producers across Alberta and found that producers rated neighbors and friends as the most useful sources of agricultural information. The On-Farm Demonstration Program enhances and reinforces this natural communication link.

Using On-Farm Demonstration Program funds, a producer tests a new idea to see if it will work on his farm. Other farmers in the district can see the technique in action on an operation like their own.

These and all of the department's programs are supported by a province-wide network of well motivated and highly-qualified extension staff with a wide variety of agricultural expertise. They include a front line force of about 100 DAs in 66 district offices, most of which are also staffed by home economists. Backing up the districts are the six regional offices, each including a powerhouse team of specialists in: livestock; farm economics; crop production; agricultural engineering and dairying. Depending on the location, each regional office may also include experts on swine, forage and special crops. Every means of communication from the telephone call to the farm visit, radio, television, or the local newspaper, meetings, seminars, conferences and on-farm demonstrations are used to get the information to the producers. They assist and participate with producers and producer groups, ag service boards and commodity groups such as the Cattle Commission, Pork Producers, Sugar Beet Growers, in fact every conceivable interest group, in all aspects of agricultural endeavor and planning.

Producer input

Producer input is central to the decision-making process in Farming for the Future's Research and On-Farm Demonstration programs.

Active producers form the majority of members of the Agricultural Research Council of Alberta, the body which evaluates and approves Research Program proposals.

For the On-Farm Demonstration Program, each of the six agricultural regions in Alberta has its own review committee. Each of these committees has a majority of active producers.

Active producers, those who are closest to the needs of the agricultural industry, are playing a vital role in Farming for the Future. As a result, they are also playing a vital role in the future of the agricultural industry. The decisions made today on agricultural research affect agriculture both today and long into the future.

New and future technologies

New technologies that will influence agriculture in our second century include biotechnology, computers and robotics.

Biotechnology is still in its infancy. But it appears that through genetic engineering not only will breeding be faster but that a much wider range of characteristics may be incorporated into new strains through intraspecies breeding.

Many producers already have on-farm computers to deal with farm accounting problems. These computers could also be used to great advantage in production management decision making. The complex decisions that must be made in livestock and crop management are ideally suited to computer assisted solutions. What we need now is for industry to come out with software packages - with all the bugs worked out - so that producers can use this new technology to its fullest.

On-farm robotics may also have an important place on the future high-tech farm. Self-propelled tractors and machines that monitor their own inputs and outputs could increase production efficiencies.

Opportunities

There is great potential for technological advances in agriculture. However, some changes need to take place to make the most of our research and demonstration investment.

Long-Term funding

First of all, it is essential that research scientists have a reliable source of long-term funding. Agricultural research programs often take many years to achieve results that can be applied to the industry. Researchers need to have a reliable source of long-term funding for these programs in order to plan their programs, to hire and maintain qualified scientific and technical staff, and to bring the research to fruition.

Alberta Agriculture is already taking steps towards long-term funding by the creation of the Alberta Agricultural Research Institute. The long-term funding available through this institute is designed to encourage world class agricultural research that will benefit Alberta for many years to come.

Research scientists in demonstrations

We encourage research scientists to take part in on-farm demonstrations. By actively participating in demonstrations, research scientists will be better able to communicate their ideas to producers and extension staff. This will also enable researchers to learn first-hand about some of the problems that producers are encountering and help researchers to structure their future projects to meet these needs.

Private industry

I believe that private industry must take a greater role in research and development activities. Statistics show clearly that investment in agricultural research and development generates excellent returns. We all benefit either directly or indirectly through agriculture research.

Only seven percent of Farming for the Future funds have gone to private industry projects. At a recent meeting with private industry we encouraged private industry to submit more high quality research applications, to conduct more research on its own and to fund more projects jointly with the government.

Encouraging development

New technology must go through a development stage before it can be widely commercialized. Our investment in research will not be fully productive unless we encourage full development, commercialization and broad application of the new technology by producers. We, therefore, need to put increasing resources into the development stage of technology transfer. This will require new funds to fill the gap.

Conclusion

Our capabilities in agricultural technology have grown by leaps and bounds over the last hundred years and especially over the last twenty years. This is the result of investment of time, effort and money into agricultural research and extension. The Alberta Government will continue its investment in this vital area in the years to come.

We have made enormous progress in our first hundred years. The potential for progress in our second hundred years is just as great.

Agricultural education — harnessing new technology

Vaccine research and development for the livestock industry

Stephen D. Acres

Introduction

Economic losses caused by **common infectious diseases** of livestock and poultry are estimated to be **$1.5 billion annually in Canada**. The most costly diseases are those which affect the respiratory, enteric, and reproductive systems. These include diseases such as shipping fever of cattle, enzootic and Haemophilus pneumonias of swine, chronic respiratory disease in poultry, neonatal diarrhea, mastitis, and infectious infertility.

Challenges

The causes of many of these diseases are complex and are influenced by several factors. These are shown in Table 1 and discussed briefly below.

Table 1. Factors Which Make Vaccination Against Complex Diseases Difficult

1. Multiple Infectious Agents
2. Mucosal Immunity is Understudied
3. Newborn are Highly Susceptible to Infection
4. Neonatal Immunity is Limited
5. Management Practices Increase Risk of Disease
6. Industry Segmentation Reduces Opportunities for Successful Immunization.

1) **Multiple Infectious Agents** - Many of the diseases mentioned above are caused by several different microorganisms or infectious pathogens. Often, combinations of pathogens act synergistically or

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sequentially to cause clinical illness. A primary example of this is shipping fever pneumonia of cattle in which a variety of management stresses and infection of the respiratory tract by one or more of several viruses initiate the disease process. Both factors cause suppression of the immune response which allows a secondary infection with bacterium *Pasteurella haemolytica* type 1-A. Pasteurella is commonly carried in the nasal passages of calves and infect the lungs causing an acute fibrinous pneumonia.

Therefore, it is the infection with Pasteurella, or occasionally other bacteria, which causes the severe clinical illness and death which is common in feedlots. However, Pasteurella appears to need help in the form of a previous viral infection and suppression of the immune system in order to be fatal. Because disease pathogenesis involves a series of steps, there are several approaches which we can use to reduce the disease losses. These include immunizing against the viruses, immunizing against the Pasteurella, preventing immunosuppression, and reducing stress. Methods of achieving these objectives are discussed further below.

2) **Mucosal Immunity is Understudied** - The diseases discussed above are initiated at, and often occur on the mucosal surfaces of the body. These surfaces are enclosed by the body, but they are actually outside of the animal and hence, continually exposed to infection. The immune mechanisms which protect these surfaces from infection are somewhat different from, and generally less understood, than the immune mechanisms within the body.

3) **Neonates are Highly Susceptible to Infection** - The newborn of all animal species represent a particularly susceptible group to many infectious diseases. This occurs for several reasons including the following:

a) The placental structure in most animals does not allow transmission of immune substances from the dam to the fetus prior to birth. Hence, animals are born without protective immunity.

b) Many of the bacteria and viruses which cause neonatal diseases are carried by the dams, and hence they are always present in the environment and can readily infect the young at birth. Under normal circumstances animals are sterile at birth, therefore there is no competition between infecting micro-organisms for a "niche" when they colonize a tissue.

c) Most newborn animals are relatively immobile for a few hours after birth. Therefore, they cannot remove themselves from a contaminated environment.

4) **Neonatal Immunity is Restricted** - Neonates acquire their first and most important immune protection in the form of antibodies. These are transferred from the dam to the offspring in colostrum. This process, whereby antibodies are concentrated in the udder of the mother and transferred to the young by nursing is referred to as "transfer of passive immunity". It is a complex process which can, and often does, fail for a variety of reasons. Even when it is successful, it has a number of

deficiencies. For example:

a) High levels of passive protection interfere with the development of active immunity which occurs in response to infection with an organism from vaccination. This makes it difficult to vaccinate newborn animals within the first several weeks after birth.

b) Passive immunity often provides good protection against systemic diseases, but transient or limited protection against diseases which occur in the intestine. For example, virtually 100% of cows in Western Canada have colostral antibodies against rota and coronaviruses, which are two of the most common causes of scours. However, the antibody levels decline rapidly following parturition and by the end of the first week are too low to prevent infection. Hence, the peak incidence of rota and coronaviruses infection occurs during the second and third weeks of life.

Therefore, while nature has provided a rather intriguing and sophisticated mechanism of transferring protection to the offspring, it is not a fool-proof system and is one which interferes with our ability to manipulate the calf's immune response to provide longer protection.

5) **Management Practices Increase Risk Of Diseases** - During the first century of agricultural development in North America, our management systems have changed dramatically from those used by our forefathers. While they are generally more efficient, they have increased the incidence of some diseases and in fact have probably created new diseases. Again, this has occurred for a variety of reasons including the following:

a) Synchronization - Many of our management procedures standardize and synchronize the production cycle. For example, we now have the ability to synchronize estrus in groups of animals which of course also synchronizes parturition. This has led to an increase in the use of procedures such as batch farrowing, batch weaning, etc. In terms of infectious diseases, the effect has been to synchronize the period of susceptibility to infection in larger and larger populations of animals. This in turn has created the potential for major outbreaks of disease.

b) Stress and Stressors - Procedures such as weaning, transportation, castration, immunization, implanting, etc create physiological stress. We are just beginning to appreciate the profound effect of some of these stresses on the immune response. These types of management procedures often suppress or paralyze the immune response making it impossible for the animal to protect itself against infection with a variety of organisms.

c) Nutritional and physiological disturbances are also induced by a variety of management techniques. For example, the dramatic changes which occur in the feeding program of calves being introduced into feedlots appears to precipitate some outbreaks of shipping fever.

d) Spread of Infection - Management procedures such as mixing, confining, and crowding of animal populations all promote the spread of infectious agents and create the potential for outbreaks of disease.

6) **Industry Segmentation Reduces Opportunities for Successful Immunization** - In some cases, segmentation of an industry makes it difficult to apply basic immunological principles. The best example of this probably occurs in the cattle industry where the cow-calf sector and the feedlot sector function almost as two separate industries. If we accept that the most important infectious disease of the cattle industry is shipping fever pneumonia, then we must accept that this segmentation is another factor which makes it difficult to overcome the problem.

Let me illustrate the impact of this segmentation on disease prevention in the following way. Our understanding of the calf's immune system and the infectious organisms which cause shipping fever tell us two things: firstly, in order to prevent shipping fever calves must have protective immunity by the time they arrive at, and are introduced to feedlot life, or within a few hours therafter. Secondly, in order to develop that protective immunity by classical vaccination methods, not only are better vaccines required, but these vaccines must be administered well before arrival at the feedlot. In fact, immunological principles strongly indicate that animals should be vaccinated twice in order to obtain a maximum immune response.

These two factors mean that protection against shipping fever must be started by ranchers in the cow-calf sector. In addition, management practices applied later by the feedlot sector must be consistent and supportive of what has been initiated on the home farm. Therefore, until and unless these two segments of the industry can find the economic stimulus to work on the problems together, it will be difficult to reduce this particular disease by classical vaccination methods. At the same time, I think it is essential that researchers provide better vaccines and vaccination programs than have been available in the past.

Hope for the future

In spite of the difficulties which I have discussed above, research is providing potential solutions to many of the problems (Table 2). For most of the diseases mentioned, no single solution will eliminate the problem and it will likely take a combination of approaches to significantly reduce the economic losses. These approaches will involve using new and better methods of immunization, of which vaccination is only one, in conjunction with management changes.

Table 2. New Methods of Providing Immunity to Complex Diseases

1. Genetically engineered vaccines
2. Multi-Component Vaccines
3. New Vaccination Methods
   a) intramammary
   b) "in utero"

Table 2 cont'd

- c) common mucosal immunity

4. New Adjuvants
5. Monoclonal Antibodies
    - a) Disease Prevention
    - b) Treatment
    - c) Diagnosis
6. Immunomodulators and Immunoregulators
7. Anti-Viral Drugs
8. Vaccination to Improve Productivity

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1) **Genetically Engineered and Synthetic Peptide Vaccines** - Several new methods of immunizing animals are based on the use of modern biotechnology, which is dominated by two procedures:

a) The use of hybridoma technology to make monoclonal antibodies.

b) Production of proteins by genetically engineering microorganisms.

These two approaches, in combination with the use of synthetic peptides, will provide a variety of new ways of immunizing against infectious disease.

Monoclonal antibodies are extremely sensitive and specific tools which are helping to identify the specific pieces of viruses and bacteria which are responsible for causing disease. This in turn leads us to a better understanding of the proteins or antigens required to stimulate protective immunity against these diseases. Once these essential antigens are identified, biotechnology again provides methods of producing them inexpensively and in large quantity by genetically engineering microorganisms or by chemical synthesis. This will provide a new generation of live and killed subunit vaccines which are safer, more effective and stable than conventional vaccines. The subunits will be in the form of individual proteins, subunits within proteins, or even smaller segments of amino acids known as epitopes.

2) **Multi-Component Vaccines** - As mentioned above, many of the diseases which continue to cause major problems under our existing management systems are caused by a variety of infectious organisms. Therefore, to reduce these diseases vaccines will have to contain several different protective antigens. Through genetic engineering, the genes responsible for the production of a variety of antigens can now be cloned into a single vector or expression system. In the future, this will mean that a single organism will be engineered to protect against a variety of different diseases. Again, the viruses which predispose to shipping fever are good examples. These include IBR, PI-3, respiratory syncitial virus, and parainfluenza-3 virus, all of which it may be possible to put into one vaccine, in addition to Pasteurella haemolytica. It may also be possible to genetically produce a single organism which will carry several protective antigens to the intestinal tract of newborn animals and stimulate active

immunity which will last for several months.

3) **New Vaccination Methods** - Biotechnology allows us not only to identify protective antigens, but to produce them in a variety of different forms. For example, rather than immunizing with an entire virus or bacterium, it is now possible to immunize with specific proteins or subunits of specific proteins of these organisms. In the case of rotavirus, one of the common causes of scours, we have identified and synthesized several stretches of amino acids which stimulate protection. These are called epitopes. The epitopes are less than 20 amino acids in length and can be synthesized chemically or produced using genetically engineered organisms.

Having protective antigens in different forms allows us to explore new methods of vaccine delivery such as intramammary immunization, *in utero* immunization, and other routes which previously have not been possible to use. A great deal more work needs to be done on these methods; however, if *in utero* immunization can be made practical, it will revolutionize the way in which animals are vaccinated. It will make it possible to stimulate protective immunity against a variety of diseases prior to birth.

4) **New Adjuvants** - Adjuvants are substances which are incorporated into vaccines to increase the body's immune response. A variety of adjuvants have been used for a number of years, however, most of them have some limitations. In terms of stimulating mucosal immunity, which is important in preventing the diseases we have talked about, new and improved adjuvants appear to be necessary. A whole variety of new substances is currently being tested and it appears that some of these will provide new alternatives.

5) **Monoclonal Antibodies** - Monoclonal antibodies are produced by cells called hybridomas which are the result of fusing together two cells: a cancer cell and an antibody producing cell. The resulting hybridoma has some of the characteristics of both parents, namely the ability to grow indefinitely and to produce antibody. What this means is that it is now possible to design and produce antibodies in a test tube whereas, previously, it was possible to produce antibodies only in an animal. Monoclonal antibodies have several uses.

a) *Disease Prevention*

The first example of disease prevention is a product sold under the tradename of Genecol 99, which is a monoclonal antibody against the K99 antigen of enterotoxigenic *E. coli*. The K99 antigen is critical in the pathogenesis of diarrhea and allows the bacteria to attach to the intestinal lining of young animals. The monoclonal antibody is given to newborn calves by mouth soon after birth and prevents attachment of the bacteria to the intestine. This reduces their ability to cause diarrhea. The use of monoclonal antibodies for prevention of other diseases is currently being explored.

b) *Treatment*

Monoclonal antibodies can also be used to target or carry other drugs to specific locations in the body. Hence, it may soon be possible to attach an antibiotic or some other type of drug to a monoclonal antibody and target it to a specific location where the effect of the antibiotic or drug will be maximized.

c) *Diagnosis*

Monoclonal antibodies are also the basis of a new generation of rapid, relatively inexpensive, and automated diagnostic techniques referred to as enzyme linked immunosorbent assays (ELISAs). Within the next 10 years, rapid and simple "animal-side" diagnostic kits which farmers and ranchers can use will become available for diagnosis of disease, detection of estrus and pregnancy, etc. These will help us to more specifically target the other means of inducing immunity which I have been describing by making diagnosis faster, cheaper and more specific. In combination with genetically engineered subunit vaccines, ELISAs are also being developed which will allow us to differentiate vaccinated from naturally infected carrier animals. This will be useful in a variety of diseases, some of which have export potential.

6) **Immunomodulators and Immunoregulators** - A variety of substances are now being produced which will help us to reduce the immunosuppression caused by stress or infection. The first of these are the interferons which can now be produced in large quantity using recombinant DNA techniques. Interferon is currently being tested for use against shipping fever in cattle and is showing real promise. Its main effect appears to be to prevent or reduce virus induced immunosuppression. This prevents animals from becoming susceptible to infection with *Pasteurella haemolytica* and developing shipping fever. Other lymphokines, such as interleukin-II, are also being explored for use in animals.

7) **Anti-Viral Drugs** - A number of anti-viral drugs are being developed which may also provide new ways of reducing or preventing viral infections. While none of these is currently in use, it appears to be one of the areas which will provide some new possibilities within the next decade.

8) **Vaccination to Improve Productivity** - In addition to vaccinating to prevent infectious diseases, it will soon be possible to vaccinate animals to regulate a variety of hormone-controlled characteristics such as growth rate, milk production, and reproductive efficiency. This procedure is referred to as hormone immunoneutralization (HIN). It involves immunizing an animal against a natural hormone so that the antibody which is formed will neutralize the activity of the hormone. This will lead to improvement in performance if the hormone is one which limits the expression of a trait or characteristic.

The hormone somatostatin is one example because it is the negative feedback mechanism, or the controlling mechanism, for growth hormone. By immunizing against somatostatin, anti-somatostatin antibodies are formed which neutralize the activity of somatostatin. As a result, the amount of growth hormone produced in an animal increases and this improves growth rate, milk and wool production, and perhaps adaptation to cold stress. Research is still necessary to learn how to optimize this approach; however, this method is already being used commercially with some of the reproductive hormones.

Hence, the future will provide a variety of new, innovative and revolutionary methods of inducing immunity. New and better vaccines which provide immunity against a variety of diseases and over longer periods of time will become available. In addition, products such as monoclonal antibodies, interferons, and anti-viral drugs will provide new ways of inducing **immediate** protection. These types of products, which can be administered to animals entering a **high risk situation**, for example calves entering a feedlot, will provide immediate but short-term protection. By reducing the short-term risk, this will allow us to use classical vaccination methods to induce longer active immunity.

Therefore, a variety of different products used in combination will give us much more flexible, and hopefully successful immunization procedures. However, I stress that immunization by whatever methods is not the whole answer. These new techniques must be used in combination with improved management techniques in order to have maximum benefit. Therefore, in summary we are entering a period when we will have many more options than we have had in the past for preventing and controlling infectious diseases.

Agricultural education — harnessing new technology

Crop development and technology

Dr. James Helm

In recent years we have all seen great claims for the new technology areas of genetic engineering and biotechnology. These claims along with the advancing technology in space science, computers and medicine have left the impression that large, almost magical, changes in the types of crops we will grow and the production technology we will use to grow them, will occur overnight. These claims have been aimed at a society which views technological advancement as an everyday expected occurrence. If agriculture is to get society's attention, we need to have miraculous research results, or at least perceived miraculous results. We can only get these miraculous results through research but it seems we can't get the research funding needed to produce the results without first achieving the results. Agriculture research in Canada continues to face declining budgets and aging, antiquated facilities. In spite of this, for at least two generations, our society has seen an ever decreasing amount of its disposable income required to feed itself.

How do we get society's attention?

One way is to make predictions or promises of the new technology on such a grandiose scale that we can coerce business and government into investing the money necessary to run these expensive research programs. However, this approach can backfire and bankrupt society when its predictions don't materialize within a reasonable time limit. After almost a decade of this media hype approach to seek funding for research, a new refreshing long-term approach is being taken in the plant science research areas. People in general are beginning to realize that drastic genetic shifts in crop production, theoretically possible in the laboratory, are not a practical approach on the farm. Scientists do believe, however, that this new technology will eventually lead to important changes in our agricultural production. Between now and the turn of the century, we will see advancements in plant science at an explosive rate which will make the technological gains of the last 20 years pale by comparison. Genetic potential of crops will be expanded to achieve 100 to 200% increases in yield and efficiency.

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These genetic achievements will bring about other changes in all areas of crop production including soil preparation and conservation, crop seeding, weed, pest and disease control, harvest operations, storage and processing.

How do we get this technology to the producer? There is no simple answer because crop production is so diverse that methods that work in horticultural crops just don't work in cereal crops. Oilseed crops have a high profile and potentially high profit margin while forage crops must be marketed through our livestock industry.

Most of the time when we speak of crop production in western Canada we think of wheat, barley and canola, our 3 main export crops. However, a great deal of immediate research technology and technology transfer is needed in the area of forage crop production, the cornerstone of our cattle industry. Too often we try to separate the different areas of agricultural production and look at them in a single minded way: wheat is wheat, canola is canola, cattle are cattle, etc. Instead we must recognize that all areas of agriculture are dependent on the other areas if we are to maintain an economically viable industry. In general, the largest, most important markets for our crop producers are our livestock producers. Without a strong livestock industry, we would have no crop production in western Canada to speak of. If we keep this in mind, I think we can begin to address the technology transfer aspects of our industry.

The technology available today in crop production is potentially sufficient to more than double our production. The question we must ask is: why is so much emphasis put on the development of new technology and new research, if we can increase our production so drastically now by just simply putting our existing technology to work? It is not the fault of the technology itself, nor is the present technology the best possible technology for tomorrow's world. The only conclusion I can draw from this fact is that our ideas on technology transfer need to be revised markedly and any roadblocks which we have erected to technology transfer must be removed.

Studies done almost a decade ago in Canada, show it takes 14 to 20 years to get 50% of the producers to accept new technology in crop production. The one major exception to this phenomenon has been the rapid changes in canola production we have experienced; this is a possible model for the future.

Why doesn't the available technology flow down to the producer? I think if we look closely we can see that most of the time it is due to government imposed restrictions on the industry. The basis to this problem of technology delay is the cheap food policy we so carefully guard in North America which in collaboration with the government systems of production control and the readily available mechanical and electronic technology, limits our producers' options in expanding production and remaining economically competitive.

In the past, farmers have found it more economical to increase production by adding acres rather than by becoming more efficient on a per acre basis. This has led to expansion into traditional forage producing lands and marginal soil and the advent of the summerfallow philosophy. The results have been soil erosion, soil salinity, loss of land productivity and low level management. Our society can no longer tolerate this type of approach to agriculture production. If a producer is growing barley, wheat and canola and achieving the present provincial average yields of 45, 35 and 20 bushels per acre respectively, and he receives an initial quota of 5, 5 and 10 bushels per acre respectively, why should he increase his yield per acre? Would it not be more economical to increase the number of acres in production? That is exactly what the successful producer has done. The producer is caught in a situation where the government holds a monopoly over his operation which in effect dictates what he can grow, how much he can sell and to whom, and what price he will receive, thus controlling his land inputs and adding to the soil degradation of our western Canada agriculture base. The industry on the supply side of production has, by comparison, fewer restrictions while the industry on the demand side is almost totally controlled by the government.

What's the answer? In the long run it must be less government control and more input from private industry.

The other side of this is the research and development. It is frustrating to the research scientist to see the slow adaptation of technology by the producers. Yet, he must continue to endeavor to move the technology from the research lab to the field. In the next 15 years, the technology or scientific development that will influence agriculture will be exponentially greater than that of the last 15 years. This new technology is rapidly being developed by private corporations instead of the public research institutions with which we, in Canada, are much more familiar. Why? We have reached the limit of expanding production by increasing land base, using bigger, more efficient machinery and computerization, etc. These areas will continue to play an important role in crop production and production efficiency but success, which is measured by profits, will depend upon production efficiency which I define as higher yields per dollar of input on a per acre basis. This is where the corporate business community can excel. They have the ability to transfer technology rapidly, in a matter of 1 or 2 years versus the 14 to 20 we have traditionally been used to. The business community will integrate to provide the resources, the knowledge, the products needed to reach maximum production efficiency and to move the product into domestic and foreign markets - not without government input but more efficiently, hand-in-hand with the producer organizations. This is already the case in Europe, much of the U.S. and Australia. Canada seems to be the last to recognize these coming trends.

I feel the major fact that contributed to the success story of canola in Western Canada was the producer and user group, the Canola Council of Canada, which played a major role in the technology transfer. The importance of similar commodity groups and producer associations has long been overlooked as a method of marketing technology. I am convinced that they are the key to technology transfer in the future.

Research directors of several of the multi-national, agriculture corporations, have indicated to me that they are ready to move into Canada but are still sceptical of the "Government controlled system", unsure of how it will effect their productivity. Breeders' rights legislation may be the one log which, when removed, will break the logjam that has been holding back privatization of agricultural research in Canada. However, other government imposed hindrances to private research are perceived by the business community in the form of the variety licensing system, the market grading system, transportation and marketing, which are controlled by the Federal Government.

Intensive management systems can be economical in western Canada only if a relaxation of, or multiplication of, grade standards are available. An example is our Cadillac hard red spring wheats; high protein and high yield in wheat are negatively correlated especially if only certain protein quality in a certain kernel shape and size is acceptable. New semi-dwarf, slightly softer, lower protein wheats grown in the U.S. and Australia, would increase wheat production 30% to 50% in western Canada, but can't be grown by our producers due primarily to government grading restrictions. We are still trying to sell Canadian Cadillacs in a Toyota world.

If these government barriers to production are relaxed to the point that the new technology can be utilized, I feel all barriers to technology transfer will be removed as well. This will then open the door to the research and technology to be developed in the next 15 years putting technology development and technology transfer back in synchronization.

Where will our future technology be developed? Can Canada stay competitive in a world market where it will need to purchase from outside its borders, 90% of the technology required to modernize its food production industry? I think the obvious answer is no. While this technology is expensive, the returns are very high. Studies on the canola industry in Canada have shown a return of $22 for every research dollar invested between 1951 and 1982. Over a much broader base of crops, in the U.S., it is estimated that research returns in food production will be in the area of 50-60% on investments per year over the next 15 to 20 years. That is why multi-nationals are buying up plant breeding companies and biotech research firms. This level of return is now available because -

1. the future need for food is high.
2. food production per capita is decreasing in most of the populated areas of the world.
3. increased production in the U.S. and Canada can only be accomplished by more intensive farming practices.
4. intensive farming requires more consumables: fertilizers, pest control, herbicides, fungicides, seeds, irrigation, etc.

What this means is that the company with the best technology package for sale will cash in on the big profits to be made. These corporations are willing to spend the 10 to 20 years in research and development: but when the technology is ready for the market, they won't wait 14 to 20 years for its adaptation. If history is correct, their advertising and marketing strategies will saturate the market area within a 2 year period.

Public institutions can compete in the research and development of this new technology. But, without massive changes in philosophy and a sense of urgency in the marketing of the technology, they will fail to bring the technology into use by the industries.

I submit to you that it is essential that government begins now to refine the research and marketing system so that they can become cooperative partners with the agriculture industry and the producer. Groups like the canola associations, forage associations and barley growers association, to name a few, are the key to bridging the gap between government and private industry and must play a greater role in technology transfer in the future. Government must become a solid, non-biased source of information and technology through its traditional extension arm but we must rely more on the producer associations to become the primary means of technology transfer to the farm. Government must take a leadership role in developing the resources needed to carry out research in all areas of crop production, in both the high tech and the traditional research areas. There is no other area of our economy which will pay the dividends a revitalized agriculture research community can contribute to this country. Without this input, Canada's agriculture will stagnate and decline as a major producer and exporter.

Let me quickly give you my impression of four research objectives needed in Alberta in the next 10 to 20 years.

1. Forage crop production and management systems. This is a low profit technology package that will not be appealing to private industry but is essential to the stabilization of our livestock industry. We must proceed in this area immediately.

2. Intensive crop management and production systems. This would include new variety development by use of conventional plant breeding and genetic engineering, new fertilizers, pest and disease control, storage, harvest and marketing, research, increasing yield per production unit by 100% within the next 20 years. This is essential to make our annual crop producers competitive on the world markets.

3. Germplasm conservation and development. This means the collection and maintenance of all possible plant genes to be used in our crop breeding areas. Without this basic scientific resource, our ability to accomplish the first two goals is drastically reduced. It

encompasses genetic conservation and collection as well as genetic engineering. There must be a worldwide priority given to this important area of genetic conservation before our population destroys forever important genetic resources.

4. Soil conservation and management systems. This is essential to guard against the further degradation of this important resource. Our land base is our most important agricultural resource and must be treated with the respect deserving of its importance. It is upon this single area that our entire economy is based. A scientifically based land use policy must go hand-in-hand with research in this area.

You will notice an absence of a long list of biotechnology projects, genetic engineering and basic research. I want to stress, however, that these areas of research are an integral part of the main objectives I have listed. The primary scientific restraint on technology transfer is the lack of the basic research necessary to move the technology from the research laboratories to the field laboratories. We must promote all areas of biological research in order to have the feeder technology necessary for the crop production scientists. We must have the tools necessary to meet the objectives needed to keep agriculture as a viable part of the Alberta business community. We can only do this if government, business and producers work together to develop, transfer and utilize the new technology which will insure a viable agriculture in the Second Century.

Agricultural education — harnessing new technology

Product and process development for the food industry

Dr. F.H. Wolfe

Any attempt to forecast developments for the next century in the area of product and process development has the same limitations as Astrology and Weather Forecasting. If we want to be accurate, our predictions will be so general that they would be useless, and as we try to get specific, it becomes more likely that we will be completely wrong. With this limitation in mind, I have tried to prepare a short overview of the areas which seem to have some likelihood of providing new technologies that will result in new products and new processes for the Food Industry. Where possible, I will try to give some examples of products and how they might be used, and I will conclude with a general scheme for keeping current as new and unpredictable opportunities arise.

The four general areas I would like to describe are:

Genetic manipulation of bacteria and other microorganisms
Enzymatic modification of animal and plant materials
Manufactured food analogues
Alternative methods for food processing.

Genetic manipulation of bacteria and other microorganisms has enormous potential for producing familiar products at less cost, and also for producing brand new products. The techniques for such alterations have been perfected, and the major excitement now in the field is the search for something to use these techniques on. Major Genetic Engineering Corporations are scouring the world for ideas on processes and products that would benefit from the application of their expertise. We have all heard about inexpensive insulin being produced by bacterial cells that have been genetically modified. I think that by 2000 we will be able to produce almost any pure biological material that we desire in bacterial culture. Some examples of applications to food might be the following.

Lactic acid bacteria might be crossed with calf stomach cells, then produce the renneting enzymes needed for cheese production. Such

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bacteria would make manufacture of new and exotic cheeses possible in a one step process, and remove the need for rennet.

Yeasts which have been matched to termite cells might be able to digest sawdust and straw, and produce new kinds of beer, wine or scotch whiskey.

Combining the desirable genes of yeast, bacteria and mold together could result in one step soy sauce production. That process now uses three successive fermentations and brewing takes nearly one year to complete.

Many other foods, from sausages and sauerkraut to buttermilk and bread, use a wide variety of naturally occurring selected strains of microorganisms in their production processes. All of these are candidates for genetic manipulation to enhance their properties. All we need in this field is the imagination to define new objectives.

As a last example of the potential of this field, we can try to blend old and new knowledge. Cultured dairy products resist spoilage because the useful bacteria present are more competitive than the undesirable ones. Can we apply this principle to meat? Would it be possible to treat meat products or fresh meat with cultures of "good" bacteria, genetically modified to cause no spoilage themselves, but yet prevent the growth of other unwanted bacteria? An interesting possibility, which might be a reality in the near future.

Next, let's look at enzymatic modification of animal and plant materials. Many foods are liquids. Enzymes can be fastened to insoluble support materials and still retain their activity. Hence we can carry out enzymatic transformations on liquid materials in continuous processes, without losing the enzymes. Illustrative examples are not as easy to find as with the previous case, but we can mention clarification of fruit juice by immobilized enzyme hydrolysis of pectins, decolorization, removal of lactose from milk or whey by immobilized lactase, and many other extremely difficult separation tasks made easy by enzymes.

A last example here is modification of the properties of animal and vegetable oils, and fats by immobilized enzymes. Enzymes can be used to "hydrogenate" unsaturated fatty acids. Maybe we can find a few that "dehydrogenate" as well, and use them to produce "polyunsaturated" fats and oils in a continuous stream: or possibly use them to remove cholesterol, or other undesirable food components in one step. The possibilities are endless.

Now we can turn to manufactured food analogues. I don't want to call these "imitation foods", because these are not imitations. These are edible products which resemble familiar foods, but have been created by applying our knowledge of the behavior of biochemical materials to the problem of duplicating nature.

Familiar examples in this area include texturized vegetable protein meat-like products. These have been available for over 20 years. The earliest products were soy burgers. They were pretty easy to manufacture. Now we have spun-fibre chicken breast slices, King crab legs made from waste fish paste, and reformed T-bone-like steaks. New developments in this area include our own standardized potato skins. These new skins are really an improvement on nature, because they are stronger, tastier, more uniform, cleaner, a lot cheaper, and they contain no undesirable chemicals.

The sky is the limit with these manufactured food analogues. We can make French fries from potato granules, "new-fangled potato chips". We already have edible baloney skins: how about a poultry skin? A new product that might be very acceptable would be a designed chicken or turkey skin that would roast in the oven like the real thing. We could fill a preformed skin-like shell with anything from poultry breast meat to spun-soy vegetable protein. Then you could have any size or shape you want, the nice smells during roasting, everyone could have some crispy skin, and no bones left over. The possibilities here are endless. All we need are the new ideas.

Next, let's briefly look at innovative food processing. Any process we now have may have the potential to be improved in efficiency or performance. We need engineers who can review these processes and find better ways to do what is needed. This area is harder to provide examples about, since there are so many different processes that are specific to particular products or raw materials. Sweeping generalizations are not possible, but some examples might be useful. On a recent trip to China I saw a very simple, but fully automatic revolving saw hog splitter. I don't know where the idea came from, but the device had been in the plant for 30 years. Someone had solved an in-plant problem in a special way. Many of our food industries' innovations arise in this way, in response to very specific needs of individual processes. How do we find these new innovations? Probably by having trained people in our food plants, who can identify problems and provide solutions as part of their normal duties.

I don't want to belabor this point, but it is something I really believe in. The food industry, in order to remain competitive and progressive, needs trained personnel. In our age of technology we must have workers, managers and people at all levels who can apply, modify and adapt these new developments. The food industry must have a complement of food professionals to operate, innovate and create new opportunities for enhanced proficiency in our industrial operations. In-plant training, career upgrading, basic food science educational programs, and investment in skilled and qualified personnel are all part of this new direction for the industry in the next century. As we move into the next 100 years, we will have to follow the examples set by every other major growth industry, from energy to aviation, that is to hire and use more highly trained people in our operations.

University and Technical School graduates are essential to the industry. These are the people who can identify problems in the processes, and who will provide the answers and the profits for the future.

So, as we look into our crystal ball, we can see some things that are mandatory for our progress:

Imaginative basic research in University, Government and Private Sector Laboratories, devoted to ideas and innovations generated by industry needs.

Trained professionals in our industry's plants and factories, ready to implement the developments from research and innovation.

Enlightened management, who will support the efforts of both researchers and professionals in new products and processes for tomorrow's food industry.

Agricultural education — harnessing new technology

Technology transfer needs from the producer's standpoint

Harry D. Haney

Before talking about technology transfer needs of the producer, I want to take a moment to identify the audience. Who is the producer? It seems to me that producers can be divided into three general groups. Group A consists of producers who are on the leading edge of technology. They are in contact with researchers or research organizations, have the lines of communication established and really don't need any help in obtaining or assimilating new information or technology. The producers in Group B acquire technology in a less direct way. They get information from the Group A producers, Government Extension Departments, Private Industry representatives and the news media. They are undoubtedly in the majority. Those in Group C do not want any new information and probably go out of their way to avoid it. They are a small proportion of the farming community.

For the purposes of our discussion today, I want to zero in on Group B, so let's develop a profile of the producer in Group B. He is an active second or third generation farmer. He may have some post-secondary education. He is probably involved in a family situation with a father, father-in-law, brother(s) or son(s). He is probably carrying some debt-likely more than he was several years ago. Servicing the debt is creating some burden -he is scrambling a bit to keep up with his commitments to the bank. The present cost-price squeeze in agriculture is causing him some difficulty and he is doing everything he can to cut costs.

Now that we have a general idea about whom we are talking, let's go back a step, view his situation several years ago, and look at some of the ways he obtained and assimilated new technology. Let's also look at what kinds of new technology had the largest impact on him.

In years past, the technology pool was much smaller and most of what was available was production oriented. A large part of the technology which was available was the result of research which had been done at the Federal Government's Research Stations.

The Provincial Government's role was, for the most part, that of disseminating production-oriented information. The Extension Service

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played a major part in the process. Although there was some, there was not a great emphasis on farm management or farm financial management.

The producer himself was less sophisticated, not as well educated and probably less receptive to new technology.

Communication systems were relatively simple and that translated into a reduced flow of information and less sophisticated information. His neighbours were probably the producer's most important source of new information. Radio, television and the print media had some impact and private industry through its field services staff also provided some valuable information.

What technological advances have had the most significant impact on producers? In Southern Alberta, dry land farming methods have changed radically in the past fifty years. Much of the change is the result of work done either by, or in conjunction with, the Research Institutions. Many of our improved cereal varieties have also come from work done by the Research Institutions, namely, the Federal Research Stations, the Universities and more recently Alberta Agriculture. Irrigation technology and improvements in the irrigation districts have taken place, often with assistance from the Provincial Government.

In the Animal Science area, a good deal of research work has been done and is being utilized profitably by farmers and ranchers. Things such as improved forage varieties and production methods, cross-breeding programs, A.I., embryo transfer, and improved information on nutrition have meant a great deal to producers.

Farmers and ranchers have been able to stay in business in the past because they have continually sought out and utilized production methods that allowed them to produce more efficiently, i.e. they have been able to reduce their per-unit cost of production. All of the things I have just mentioned, and many that I haven't mentioned, have contributed in some way to cutting per unit production costs. The need to produce more efficiently will continue and ongoing research in the areas discussed by my fellow panel members will improve the producers ability to produce at a lesser cost. The production research must go on and I know it will go on.

I believe the rules of the game have changed somewhat in the past few years. Production oriented research by itself is not enough today, and it won't be enough in the future. I believe we have to put more emphasis on farm management and financial management. We have got to work harder to give producers the tools to make better financial decisions as they relate to purchasing, producing and marketing.

Let's go back to our typical producer for a moment. He has available some of the best **production** technology in the world, due in large part to the efforts of the people on this panel and their colleagues. He also has available some information which is designed to assist him in the area of financial management and financial control. I think he needs more.

He needs to know about new and innovative ways to finance his operation - probably more equity financing and less debt. This in itself will require a shift in attitudes. The producer has historically been fiercely independent -he has been an owner, not a partner or renter, and he has not reacted kindly to the idea of an equity partner who might possibly want to have some input into decision making. With the amounts of money required on today's farm, and the degree of risk involved, he may have to adjust those attitudes in the future.

Our typical producer needs to have more innovative information about how to effectively roll his farm over to the next generation. It is probably fair to assume that the majority of his wealth is in the assets of his business. How does he effectively and fairly move this wealth to the next generation without causing a never-to-be-healed family feud and without having the tax department take the majority of it? This becomes a particular problem when not all of his children want to be farmers.

How does he keep his banker happy and in doing so, continue to operate so that there is in fact some wealth to worry about passing on to the next generation. This little item by itself, i.e. keeping his banker informed and on-side is probably taking more than its proportionate share of his time right now. My guess is that it will take even more in the future.

How does he either stay in or get back into a profitable mode in his operation. The past few years have been very difficult for him. He has probably made some bad decisions on capital purchases, especially land. He got the words optimization and maximization confused. Yields have been down and prices have been down and an increasing proportion of his gross revenue is being used to service debt. He could sell some of those assets and reduce debt, but he is faced with depressed asset values. We are back to the way in which he finances the operation. He needs some innovative financing ideas.

What do I see for the future?

1. Production oriented research will and must continue. Higher yielding crop varieties, more efficient strains of livestock and more efficient production systems have allowed farmers to overcome the cost-price squeeze in the past. They will be important in the future as well.

2. More concise, more timely, more accurate and more accessible market information is and will be important in the future.

3. Financial management will become more important in the future and some innovation in terms of the way farms are financed is required. I do not think that interest subsidy programs are the only answer. In fact, I think they sometimes create more problems than they solve.

4. Successful producers will increasingly rely on specialists to assist them with technical problems. It seems that this trend is already well established. I believe it will continue to accelerate in the future.

5. Friendlier computer technology and more producer education with regard to the use of computers will be important. Farmers have to maintain better historical records and must do a better job of forecasting the future. Computers make those jobs easier and make the information more useful because of the speed with which it can be generated.

I am not going to make any recommendations in terms of which of the interested parties should be doing what. I think that everyone who has an interest has a role - governments, banks, implement companies, chemical companies, feed companies, the legal, accounting, and consulting professions, and probably most importantly, the producers themselves. One recommendation I will make is that there be some discussion and coordination between those groups that have an interest. Each of the groups has a particular forte. That should be identified and exploited.

Individuals in domestic and international markets — the U.S.A. opportunity

The necessity for freer trade with the United States

Chris Mills

Introduction

I am grateful for this opportunity to participate in a very important and extremely topical debate. One in which I have an intense interest and in which I have been attempting to develop some limited expertise - at least as it pertains to the industry that I represent.

I suppose the first thing one must do is to define what one considers to be the terms of reference. The topic "Necessity of Freer Trade with the United States" infers a need -something in which one has no option but to proceed, and I am certain that is not the case nor was it the intention of the organizers of this Conference to suggest that it was.

We obviously have a number of broad options with respect to our future trade relationship with the US - and I can easily discern three obvious ones; work towards freer trade in a general or specific way; attempt to maintain some semblance of the status quo; or attempt to break our present very great dependence on the US market by developing markets elsewhere for our products and reducing their access to our market.

Within these broad options there are obviously a large number of subsets that one can consider - with respect to timing, range etc.

The debate that is now raging - and will likely continue to rage for some time to come - is where Canada's, and in our case Alberta's, best interests lie and how we can then achieve the best deal for Canada and our own particular constituency within any broad policy thrust.

My intentions are to review some of the backdrop to the debate, try and consider what our objectives are in developing trade policy and then look at the various options as they affect Canada, Alberta and of course, agriculture.

Some comments on the background to the debate

I think it is very important to see the debate over Trade Policy in the context of the economic and political imperatives that shape it.

By Chris Mills, Policy Adviser, Alberta Cattle Commission

One overriding factor faces us whenever we start to discuss our trade relationship with the US - and that is despite a number of attempts to diversify our trade patterns away from such total dependence on one market, we have been totally unable to do so. Over the course of the 70's, the US market absorbed between 60 per cent and 70 per cent of Canada's total merchandising exports, and since the ratification of the first GATT Round, that per cent has been rising, and in 1985 was closer to 80 per cent.

In fact in the present world trade environment, with obvious aberrations caused by changes in our exchange rate, and barring protective measures against us by the US, most informed people to whom I have spoken consider that we will continue to increase our dependence on the US market, whether or not we make a deliberate effort to do so.

It is certainly difficult to discern the eventual outcome of the present debate going on in the US about Trade Policy. One obviously has to hope that the President will be able to turn back the tide of protectionism that is rampant in Congress, but if he is to be successful, I suspect a number of things will have to happen.

First of all, the US dollar obviously has to fall against other currencies. This has both good and bad connotations for Canada which I will mention later.

Secondly, the President is going to have to provide some concrete evidence that US trade interests and their concerns about protectionism and unfair trade practices by other countries are being actively addressed.

And this is where I think the US administration sees the Canadian initiative fitting in. The US has given a clear message to their more troublesome trading partners - specifically the EEC and Japan - that if no significant progress can be made in the multilateral process in the near future, the US will proceed to protect its interests through bilateral, trilateral or other lateral type arrangements.

And where better to start than with one's next door neighbour, a neighbour with a very similar economic structure and with an economy already closely tied into that of the US.

So I suspect that the US sees the US/Canadian discussions as an integral part of their wider trade aspirations - a lever to get some movement in the broader field. And if there is a break in the multilateral impasse, I see them shifting all their emphasis to that process.

Canadian objectives are much more direct and focused. Those favoring some kind of Trade Enhancement with the US see us as primarily working to secure our already vitally important access to that market, improving access for some sectors, and allowing some of our smaller protected industries to break out of the small domestic market and achieve economies of scales that will make them competitive on an international scale.

It seems to me that two other factors will impact on the progress that we make. First is the matter of the US Exchange rate. If it declines against other currencies - including ours - this will reduce some of the protectionist feelings in the US but presumably will transfer them across the border to us.

And secondly, nothing can ignore the shifting shadows of the world scene. If there is an obvious break in the present intransigence on the part of the EEC in discussing a new GATT Round in the context in which the US wants to see it discussed, then as already mentioned, I suspect the US will lose interest in bilateral discussions with Canada. But beyond that the whole international environment appears to be extremely unstable, and any development such as a collapse in oil prices or a breakdown of the world monetary system will inevitably impact on bilateral negotiations between us.

Canada's and Alberta's objectives in trade policy

Obviously any assessment of the desirability - or necessity - of freeing up trade between the US and Canada must be measured against our overall objectives in economic and trade policy.

I am not sure that any established series of objectives exists - and certainly not at the national level. Like so many other developed economies that knew exactly where they were going through the expansion years following the last war, we have emerged perplexed and confused from the recent recession. Not really knowing where we go from here, nor how best to get there even if we did know.

One thing is clear - Canada is a trading nation, earning 28 per cent of its GDP from exports (second only to West Germany). Without trade, Canadian living standards - and I suspect our population - would decline sharply.

Secondly, of course, much of Canada's export earnings depend on the export of resources. Though our top two exports are Motor Vehicles and Motor Vehicle Parts - the next eleven are resources based commodities and in all, raw or partly processed resources account for 50 per cent of Canada's exports.

This heavy dependence on the export of raw materials, combined with our small domestic market for processed goods has shaped Canada's trade policies in the past and has also molded the political environment in which the current debate over freeing up trade with the US will take place.

Naturally those industries and regions involved in the production of raw or partly processed materials for export favour any move that will give them more secure access to existing markets or improve their access to new markets, as well as policies that will allow cheaper inputs into Canada and thus make them more internationally competitive.

Conversely those areas and industries - primarily in central Canada - that have built their economies around supplying the relatively small domestic market with processed goods, are extremely concerned about any move that will expose them to competition from industries with a much larger domestic base to work from.

Most people surprisingly enough strongly favour the concept of one way free trade. Unfortunately that is not the basis on which trade negotiations occur and generally one way free trade went out with the colonial era although I suspect it still carries on in some parts of the Communist world.

So if we wish to secure improved access to any market, we are going to have to offer some equal and opposite opportunity to access our market.

Alberta is obviously front and centre of the group of provinces that rely heavily on exports of raw or partly processed commodities and are vitally interested in keeping our input costs competitive. Our energy and energy based processing sector, our livestock and meat processing industries, and even what manufacturing we have all depend heavily on the US market for their survival. Those industries have to be competitive in a North American sense and frequently see their market access and their competitiveness eroded by protectionism in central Canada.

Beyond that I suspect that Albertans have less fear than those in other parts of Canada about expanded US investment in our economy and even about the inevitable cultural impact that increased integration of the US and Canadian economies will inevitably bring.

An assessment of the alternatives

In looking at the various alternatives that I suggested were available to us, I think we can quickly deal with the first - that of attempting to reduce our dependence on the US market by seeking out other markets and reducing access to their goods. While we have seen a recent outbreak of sectorial problems between us -and I expect will continue to do so - I know of no one who thinks it is either feasible or desirable to reduce our trade relationship with the US.

On the other hand, Canada would be foolish to put all our eggs in one basket, and in any case would find it almost impossible to do so. Freeing up trade with the US does not necessarily mean reducing trade with other areas nor reducing our efforts to free up trade with those areas. In fact there are those who would argue quite persuasively that the way for Canada to improve access to other markets is to piggy-back into them on the backs of the much stronger US trade negotiating position - which is what would happen if we had free or freer access to the US market.

The second alternative - that of maintaining some semblance of the status quo - is a much more seductive proposal especially for those concerned about the negative impacts of free trade. Why change a good thing they argue. Here we have the best of both worlds - relatively free access to the US market for most goods that we want to see, while at the same time maintaining some degree of protection for our frailer industries and some degree of autonomy over our economy.

In this area of course we begin to develop some overlap between the different alternatives. A goodly number of those who are opposed to freeing up trade are suggesting that at some time in the future it might work but that in the meantime we should make haste very slowly. A number who favor freer trade but don't properly understand the consequences are saying let's move, but only in certain areas and only after considerable study.

I suppose the strongest argument against the status quo is that in economic systems, as in biological ones, there is no such thing as a permanent status quo - it is an inherently unstable state. Our trade arrangements with the US will tend to move in one direction or the other, and the concern of those favoring freer trade is that attempts to maintain the status quo will actually encourage the US to develop more protective measures and thereby erode it. In other words the best way to protect what we have is to go for more. And after spending some time recently in the US, I suspect that there is a lot in that argument. The one thing that the average American is not presently interested in is the status quo - which he is convinced is detrimental to US interests.

The costs and benefits of freer trade

While I am much better acquainted with the benefits of freer trade -especially as they apply to the Red Meat Industry - than I am the costs, I have tried to assemble both sides of this argument, it includes the following elements:

— that a number of labour intensive industries in Canada would inevitably be driven out of business by much larger, and cost effective industries in the US. This would lead to much greater unemployment especially in some regions and especially in some industries;

— that the US is only interested in extracting Canada's natural wealth and that their size would enable them to make a much better deal in absolute terms that we could;

— that Canada would inevitably lose what economic autonomy we still have, and that the US would be unlikely to modify their economic policies to take into account their impact on Canada;

— that our two social systems and cultures, though similar, have some significant differences, especially as regards social policies, and that it would be difficult if not impossible for Canada to maintain its autonomy in social programs and its separate culture if our two economies were even more interwoven than now, and

— that Canada would become even more subservient to the US in international affairs, especially as far as trade issues were concerned.

I am sure there are far more perceived problems arising out of freeing up trade than those I have mentioned, but I expect the important observation is that they are all a matter of degree rather than absolutes. Certainly there will be some costs, but I suspect that those costs are an inherent part of our role in the North American economy and our desire to share in its affluence, and not just a feature of freer trade.

On the benefit side, I suggest the following are the key elements:

- to secure our current markets in the US;
- to improve access for those commodities that we currently sell to the US and perhaps open up access for other commodities;
- to create a much larger market for our industrial sector so that it can achieve the economies of scale necessary for it to access other markets or possibly just survive in an increasingly competitive world, and
- to access cheaper inputs for those sectors that have to compete in the export market.

Again much of this is a matter of degree. An enormous amount of study has been put into the economic impact on Canada of freeing up trade with the US - not least in the very comprehensive MacDonald Report just released. Both sides have data to support their views. The material that I have seen supporting freer trade is far more persuasive than that on the other side. However to be fair one has to admit that a number of concerns registered about the negative impact of greater US influence in our market do not lend themselves to figures. It is difficult to quantify such things as economic autonomy, cultural domination, etc.

The impact on the agricultural sector

Before this particular audience, I have to assume that the impact of freer trade on agriculture is of particular importance.

The first thing I have to say is that this area will be extremely complex and contentious on both sides of the border. Both countries have a web of policies and support systems for their agricultural sectors that they will have great difficulty in abandoning. I suspect that the US will be as cautious as Canada when it comes to a general freeing up of trade in agricultural commodities.

Both sides will have their sacred cows to be defended at all costs, and both sides will have sectors in which they wish to gain freer access. In some cases these will be similar - in which case there will be little problem. However, in some other areas (i.e. Fruit and Vegetables, and Poultry Products) the US will be looking for freer access and we will be looking to defend our industries.

As I see it, we have three separate sectors of our agricultural industry that will each be affected differently by efforts to generally free up trade between our two countries.

The first sector is the grain and to a lesser extent the oilseed industries that compete with the US in other world markets. A freeing up of trade in those sectors will have little or no impact on Canada, although I expect we will look to defend our particular marketing systems and the protective elements that go with them.

The second sector includes the Dairy and Poultry industries and many of the special crops grown in Canada. Much of their sector has operated under a considerable umbrella of protectionism over the last number of years, and the poultry and fresh fruit industries in particular would find it almost impossible to survive under any sort of free access arrangement with the US.

The last sector is that in which Canada appears to have at least some opportunity to compete in the US market and this includes the Red Meat Industries, the Canola Oil industry, some of the special crops and a surprising number of processed food products.

From Alberta's point of view, our economic strategy is built around the need to diversify our economy away from its present heavy dependence on oil and natural gas and to use our agricultural potential as a base to build a value added and labour intensive food processing industry.

Much of this strategy depends on our Hog and Beef Cattle industries - and their growth and even survival depends almost entirely on secure access to the US Market.

Conclusion

In both economic and philosophical terms I think that we in Alberta have no alternative but to support the move towards freeing up trade with the US. We have little to lose and much to gain from assuring access to that market for those things that we presently sell to them - and improving it for some other commodities.

Conversely, we would be as adversely affected as any region in Canada if the US started to adopt protective measures against Canadian products.

In my view, while the argument becomes much less obvious at the national level, the same applies to the whole of the Canadian economy. Our dependence on the US market for our exports is obvious. Many observers feel that we are moving into troubled international times and it would be comforting to know that we have at least one easily accessed and secure market for our product.

It is popular to speak of the danger of a mouse sleeping with an elephant in case he rolls over. We don't want to underestimate the value of being able to cuddle up to an elephant when the cold winds blow and there are hungry predators abroad in the world.

Beyond that, there is a broader philosophical view that is obviously a matter of individual choice. Opting for freer trade with the US rather than the status quo is opting for change. It is opting for challenge, and along with challenge there is always risk. There is not an economic model yet built that can program in the most important factor of all when trying to predict the future. And that is the way in which people - individually and collectively - react to new situations and new challenges.

I personally have great faith in the Canadian people to react positively to the sort of positive challenge that a freer trade arrangement with the US will pose for us. And if they do, we have nothing to worry about in that relationship.

Individuals in domestic and international markets — the U.S.A. opportunity

Reality of freer trade with the U.S.A. as it pertains to the Canadian brewing industry

R.A. Bennindyk

Free trade is not an issue that is new to Canada. Over the years, government and business leaders across the country have viewed free trade as a way of stimulating a sluggish economy. After all, if an industry suddenly has access to a new market that is ten times greater than its present market, won't that create greater demand which will require greater production which means more jobs for Canadians?

In recent months, this philosophy has received more and more attention from both the public and private sectors.

In February of this year, Canada's Trade Minister, The Honourable James Kelleher, tabled a discussion paper titled, "How to Secure and Enhance Canadian Access to Export Markets". This paper called for freer trade with our largest trading partner.

One month later, at the Shamrock Summit in Quebec City, Prime Minister Mulroney and President Reagan agreed on a special priority study of bilateral trade.

In August of this year, nine of the ten provincial premiers, led by Peter Lougheed, one of the earliest and strongest proponents of free trade, called for freer trade as a solution to the present economic troubles.

Most recently, the MacDonald Royal Commission report on the Canadian economy, released in September, recommends that the government pursue a "broad agreement covering substantially all trade between the two countries".

It seems that free trade or freer trade with the United States has become one of the hottest political issues of the year. Free trade is being hailed as a sort of panacea that will cure all of the economic ills from which this nation suffers. But is free trade capable of doing this? Not all the experts are convinced that free trade is the answer. In fact, some business leaders feel that freer trade will have just the opposite effect.

In an interview with Maclean's Magazine, Senior Economist of the Canadian Labour Congress, Daniel O'Hagen said: "Neither we nor anyone else has any research to back up their claims as to what would happen. But it looks like there might be serious economic repercussions

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Mr. R. A. Bennindyk is Vice-President of Labatt Brewing Company, Prairie Region and the damage might be irreversible. Higher unemployment seems inevitable and Canada would probably come under pressure to align some of its social policies with U.S. policies."

The same Maclean's article states that "Even the firmest proponents of free trade predict that the flood of U.S. products that would follow an accord could wash out or badly injure numerous Canadian industries. In fact, as many as thirty-thousand jobs in the Canadian textile industry could be lost because of U.S. imports. Wage subsidies, job retraining, mobility grants for displaced workers who would have to move and assistance grants to hard hit industries would all be needed."

According to Ross Preston of the Economic Council of Canada, "the cost of compensating the losers becomes the real issue".

Indeed, the benefits of a comprehensive agreement for freer trade appear alluring at first glance, but it is the hidden costs; unemployment, displacement: and the loss of Canadian identity, both culturally and politically, that make such an agreement potentially devastating.

Perhaps Prime Minister Mulroney said it best: "Free trade with the United States is like sleeping with an elephant. It's terrific until the elephant twitches and if the elephant rolls over, you re a dead man."

Today I would like to illustrate for you how this sleeping elephant could kill one industry and the possible repercussions it would have on the agricultural industry across the prairies.

As an example, I want to use the industry with which I am most familiar: The Brewing Industry. Before I begin I would like to stress that even though the Canadian brewing industry is one of the most regulated and closely watched industries in Canada, we have always worked hard to conform to government policies and regulations. If a free trade agreement between Canada and the United States is signed, we will continue to do our best to work with the government and stay within the bounds of all regulations. However, before we as a nation jump into negotiations too quickly, there are some things we need to consider carefully.

To begin, I would like to outline for you the development of the Canadian and American brewing industries which will explain why we are faced with the current situation.

The Canadian brewing industry is structured to comply with provincial regulations and policies. Some of these policies dictate that Canadian breweries wishing to market their products in a given province must operate a brewery in that province. This means that we don't even have interprovincial trade let alone international free trade. This restriction puts Canada at a great disadvantage.

On a more positive note, it was these policies that caused Labatt Brewing Company to open a new brewery in Edmonton in 1964. Without that brewery, government regulation would prohibit the sale of Labatt products in Alberta today. Because of this policy, jobs have been created, not only in the brewing and packaging of beer, but also in the creation of the total distribution system.

Because of these regulations, our brewing industry has evolved as a group of smaller capacity regional operations. This contrasts with the U.S. industry which has developed on a national scale using high capacity plants that serve wide geographic areas.

Today, thirty-nine conventional breweries operate in nine of the ten provinces with at least two breweries in each of those provinces.

U. S. breweries tend to concentrate in higher density population regions and are located in only twenty-six of the forty-eight mainland states. This allows high production capacities, more efficient use of material and manpower which results in much lower production costs. Nor are U. S. brewers restricted to state boundaries.

On average, U. S. breweries are almost four times the size of Canadian plants. For example, the fifth largest U.S. producer, Coors, produces at one plant the equivalent of seventy-five' per cent of the total Canadian market.

Twenty years ago the top six U. S. producers controlled less than forty-three per cent of the domestic market. In 1984, the top six controlled close to ninety-four per cent. The top U.S. brewer, Anheuser-Busch, alone produces almost three times the amount of the entire Canadian market. Individual employee productivity in Canada is only one-third that of a U.S. worker. This is a result of our smaller scale facilities and the utilization in Canada of the ecologically desirable returnable glass bottle as the dominant packaging vehicle.

Wage cost per unit of production is virtually double that of the U.S., even when exchange rates are considered.

As a result of federal legislation, the largest single material component in beer production, malting barley has historically cost Canadian brewers between fifty and one-hundred per cent more than it costs U.S. brewers.

Despite the higher costs of labour and materials, the Canadian brewing industry is a major economic contributor. On a national basis, it contributed seven point six billion dollars to our economy; two point eight billion dollars to federal coffers and two point eight billion dollars in provincial tax revenues. In Alberta the brewing industry contributed over eight-six point eight million dollars in taxes.

At the present time, the U.S. industry has very good access to Canadian markets. Through a combination of direct exports and licensing arrangements, U.S. brewers have captured fifteen per cent of the domestic Canadian market. In contrast, Canadian brewers have carved out a small niche in the U.S. market, acquiring a portion of the premium priced category which represents only three to four per cent of the entire U.S. market.

U.S. brewers also have the advantage of a market-wide distribution system, available to them through the provincial liquor boards. Once a U.S. brewer or a foreign brewer receives a listing from the Alberta Liquor Control Board, that brewer is virtually guaranteed, at no operating or investment cost, one hundred per cent distribution through all liquor stores.

In contrast, Canadian brewers must invest heavily to develop their own distribution systems utilizing various types of wholesalers and distributors to ensure that Canadian products can be found on the shelves of U.S. stores.

Because of these factors, the Canadian brewing industry has concluded that at the present time there is little pressing need to enter into free trade talks in the beer sector. In fact, there is a need to ensure fairness to Canadian brewers who must deal with the injustices of the current system. Canadian market access by American producers is already substantial and could increase through expanded licensing agreements.

Because most American brewers have agreements with Canadian producers, free trade would provide only a slight economic benefit to those American companies who have not been successful in negotiating commercial relationships with Canadian brewers.

The marginal advantages offered to these few disgruntled U.S. producers would be offset by serious economic disruption across Canada that would affect all regions and many industries.

This disruption would occur as a result of extensive plant closures, massive job losses (estimated at a potential loss of eight thousand brewery jobs -nearly one third of current brewing employment) and major reductions in tax revenues to both federal and provincial governments.

Some may argue that these problems would be offset by increased investment by the American brewing industry. However, the facts indicate that this will not be the case.

The U.S. industry has surplus capacity of seventy-five million hectolitres. That is almost two billion dozen bottles of beer: enough to service the Canadian market three and one-half times over.

One U.S. brewer has mothballed a brand new state of the art high capacity plant that is capable of producing ten million hectolitres annually. Moreover, this surplus capacity, is concentrated in the north, adjacent to the U.S. - Canadian border.

This substantial idle capacity gives U.S. brewers the opportunity to dump beer in Canada at a substantially lower cost than our own direct manufacturing costs. Without investing a single dollar in the Canadian economy, the U.S. can wipe out the Canadian brewing industry three and a half times. They won't even need to increase their present production. Nor will they need to spend advertising money because of the overflow advertising from American border stations and the cable systems.

With all this in mind, let's look at the possible repercussions a free trade agreement in the beer sector could have on Alberta agriculture.

As the Canadian market becomes over-saturated with surplus beer from the U.S., production on this side of the border would have to be cut considerably.

This will result in a drop in demand for the major component of beer making malting barley. Currently the Canadian brewing industry annually spends nearly one-hundred-twenty-five million dollars for this commodity; almost half of which is purchased in Alberta.

Under current regulations, all malting barley must be purchased from the Canadian Wheat Board. The board sets an artificial price for the malting barley that is generally significantly higher than the world market.

A free trade agreement with the United States would necessitate the elimination of the marketing board and the artificial price it sets for malting barley. This would drive the price of the barley down to the world price. Without considering the other effects of a free trade agreement, the elimination of the marketing board alone would represent an annual loss of nearly ten million dollars to Alberta agricultural producers.

The family farm as we know it would be history as large American corporate farms would be the only operations able to compete and survive in such an environment.

At John Labatt Limited, we are not against the negotiations of a better trade agreement with the United States. In fact, we heartily endorse the government's efforts to improve the Canadian economic climate. At the present time, we are not convinced that a comprehensive free trade agreement is the solution, in light of the many complications such an agreement could have on this nation: economically, politically and culturally.

With more thought and research into the long-term effects of free trade with the United States, we may discover a way to improve the economy while preserving our own national economy and identity. However, we feel that it is too early to know all the possible ramifications of such negotiations.

Free trade must be, above all, fair trade. Embodied in the concept of free trade is the principle of balance. For free trade to be successful, there must be a balance of economic benefits occurring to the participating Canadian and American companies. This balance implies that the competing companies have equal opportunity to succeed in the marketplace. In the absence of such equal opportunity, free trade will become a disruptive economic force.

A comprehensive approach to negotiations is not feasible because of the severe short term implications for this sector. Our industry recognizes the potential difficulty of the maintenance of the "status quo" which would include the maintenance of provincial boundaries, which if maintained would not allow the Canadian brewing industry to restructure itself in order to become more productive. We also know there is difficulty in negotiating on a "limited sector approach".

In closing, let me state that we are not opposed to the careful examination of freer trade, but free trade negotiations based on economic models alone will not provide all the answers. The examination must consider each individual piece of the models and the effect that free trade will have on those pieces.

With respect to the brewing industry we cannot expect to have policies and regulations maintained which force a complete provincial structure and at the same time encourage imports from producers that do not operate under the same regulations.

The Canadian brewing industry has a long tradition in each province. It is a major supporter of the agricultural industry and through its extensive marketing programs has provided financial and people support for many charitable programs and to cultural, sporting and community events.

For reasons of obvious self-interest, we want to maintain a healthy brewing industry while we continue the excellent record of economic contributions to the many small and large communities across Canada.

This can be achieved, but only through careful examination and possible changes to current policies, and above all the recognition that there must be fair trade: not free trade at any cost.

As a nation, Canada must be able to negotiate from a position of strength so that we ensure any free trade document is as fair to us as it is to our neighbours to the south. At the present time, with our present knowledge, we are in no position to do so.

Thank you.

Summary of concurrent sessions

Knowledgeable individuals on the topics discussed at the concurrent sessions were invited to present brief summaries of the content of these sessions at a reporting session at the conclusion of the conference. They were further requested to make a written report to the conference organizers. These reports follow and provide a summary of the content of the concurrent sessions.

"Farming for Profit with Financial Resources"
Reporter: Don Hoover, Deloitte, Haskins & Sells, Edmonton

"Individuals in Domestic and International Markets - Target Opportunities"
Reporter: Barry Mehr, Assistant Deputy Minister, Marketing, Alberta Agriculture

"Land, Soil & Water Resources - The Alberta Advantage"
Reporter: Eric Horton, Regional Director, Alberta Agriculture, Lethbridge

"Food Processing - A Growth Industry"
Reporter: Frank Fallwell, Calgary

"Farming for Profit with Human Resources"
Reporter: Catherine Ward, Olds

"Agricultural Education - Harnessing New Technology"
Reporter: Dr. Jerome Martin, Independent Research Consultant, Edmonton

"Individuals in Domestic & International Markets -The USA Opportunity"
Reporter: Dr. Linda Chase Wilde, Department of Rural Economy, University of Alberta

“Farming for profit with financial resources”

D.L. Hoover,
Deloitte Haskins & Sells Associates

The Farming for Profit with Financial Resources session reviewed the U.S., Canadian, and an individual farmer experience on this subject. Key points that were raised included: the level of income instability in agriculture; the present debt situation; labor and machinery replacement; capital labour exchange; and principles of, and alternatives for government intervention.

Western Canada has had to deal with risk and uncertainty for years. A greater degree of production variability exists in the Prairies than in other major grain producing regions of the world. It was noted during Dr. Gilson's papers in the plenary session, that in Saskatchewan net farm income varied by 53% per year, on average, between 1945 and 1984. In this session, it was re-emphasized by looking at the variance of inputs and commodity prices in the 1960's, 70's and 80's. Stability needs to be provided to the farm sector in order to provide stability to the credit sector and the industry as a whole.

National and international debt is a very serious concern. The U.S. Government deficit has to be addressed before stability can be regained. Past government policy and societal attitudes, that now appear out of place, have tended to generate increased debt. However, at the time, they were considered correct by many knowledgeable people including some economists. The debt in Western Canada, especially Alberta, has increased dramatically in the past five to seven years. U.S. farm debt is considered to be one third larger than can be repaid from current or projected revenues. Alberta is probably similar, and is probably one to two years behind the mid-west U.S.A.

With respect to labor and machinery replacement, there has been a shift in the type of capital requirements for entry level farming. While 20 to 30% equity was sufficient in the 1960's, for entry in the 1980's, 70 to 80% is required. This is an indication of the shift from low volume/high margin production to high volume/low margin production. While it was recognized that it is important to replace equipment before it shows significant deterioration, the need to provide for entry into farming as older farmers leave was not raised as an issue. It was recognized that a number of farmers would be leaving the scene to allow for efficiency and competitiveness in the industry.

Each presentation approached the subject of capital/labor exchange from a different perspective. There has been a lack of capital expenditures because of lower farmer disposable incomes. It is apparent that less capital is being employed in exchange for more labor. For example, one combine is being double shifted by two operators. Economies of scale have to be carefully re-examined in light of this capital/labor exchange trend. Part of the change in this trend is the expectation of continued decreases in land values. The trend will need to be closely monitored as the value of land in a number of areas is approaching its true economic value under present prices and costs.

Governments need to establish agreed upon principles of intervention before implementing programs. The following principles of intervention were outlined:

- Intervention should be as broad as the problem giving rise to the intervention effort.
- Intervention should be directed at stabilizing farmers as borrowers.
- Targeting of benefits from intervention is necessary to limit the cost of intervention, and to avoid perceptions of unfair treatment of farmers over nonfarmers, many of whom are also in financial trouble.
- Programs of intervention should be flexible in nature.
- Public intervention should not interfere unreasonably with adjustment and economic efficiency, and should be governed by realistic long-term expectations.
- Requesting assistance from the general public is not unreasonable.
- Agriculture is not the only sector of the economy experiencing serious economic difficulty.

In evaluating the usefulness of proposals for intervention which address the farm financial crisis, the following criteria were suggested: (1) the direct, and indirect costs to taxpayers and consumers; (2) the recipient distribution of the benefits of intervention; (3) the degree of stability achieved for the farming sector, and the degree of extension of this stability to lenders and suppliers; (4) the distribution to the bearers of risks of future declines in asset values; (5) the distribution to the bearers of risks of future changes in interest rates and other costs of production; (6) the distribution of benefits of future increases in asset values; (7) the degree to which necessary resource adjustment is encouraged and economic efficiency is promoted; and (8) the administrative costs expected in implementation and operation.

Policies geared to stabilizing the farm sector will go a long way to stabilizing the industry, the communities and governments. Programs and policies with targets have fairness problems, but without targeting they require massive injections of capital.

With respect to alternatives, the U.S.A. is discussing an Agricultural Financial Corporation. It has two main functions. These are owning land with rent-backs and financing write downs, with repayments geared to repayment ability. A lot of discussion was centered on increasing equity in farming, be it from other family members or from outsiders.

The necessity of being in a financial position solid enough to sustain significant losses has to be re-introduced into the minds of farmers. Financial planning has to be flexible, with special consideration for increased use of equity on the farm. Plans must be adaptive to extremely variable cash flows. It has to be recognized that a number of producers are going to leave the industry, and there should not be a mechanism to keep them all in farming. A word of caution ... a lot of solutions include or create economic and social distortions.

A series of questions from the audience were directed to: equity financing; programs of intervention, variability of prices and income due to external forces on the industry; energy costs and their impact on input costs; the need to carefully analyze tax solutions to financial problems, and the need for agri-bonds or something similar for capital markets.

This session left the participants with important messages on the topic of Farming for Profit with Financial Resources. It is recommended readers explore all three papers in detail.

"Individuals in domestic and international markets - target opportunities"

Reporter: Barry Mehr, Alberta Agriculture

1. **Review of Canadian/Alberta Performance - Japan**
   Mr. K. Ebihara, Canada Packers, Tokyo -

   Canada and Japan have a complementary trading environment as Japan will be a long-term customer and Canada a long-term supplier. Farming in Japan is a declining industry. Japanese meat consumption is rising, rice consumption falling and the remainder of the diet is steady. Japanese food imports are rising at an overall rate of 14.2%. Growth in the Japanese market for value-added food products will continue with less and less government interference.

   There will be a growing market for value-added food products requiring suppliers to make long-term commitments, including a continuous market presence and a well planned market strategy that does not challenge traditional Japanese marketing systems. Canada's product standards need to be ignored as they do not fit Japanese requirements. Japanese specifications need to be the ruling factor when product and packaging are planned.

   Competition is tough and keen as all food exporters are competing in the Japanese market. The market is demanding, dynamic and requires innovation. There will be a declining market for conventional goods of average quality. The market is first and foremost sensitive to product quality and price is secondary.

2. **Opportunities From a U.S.A. and Canadian Perspective**
   - Dr. John Morris, Senior Vice President, Safeway Inc., Oakland.

   The opportunies are for new value-added products and if this is kept as the objective an agriculture industry servicing these markets will have an optimistic future. "Me too" products are rapidly becoming extinct in the market with growth in product areas like gourmet dinners, prepared salads and single serving portions - all products that are easy to produce and prepare in the home. The demand for basic agricultural commodities is falling, while poultry demand is increasing and red meat demand declining. The boundaries between the markets served by grocery stores, convenience stores and the food service industry has become clouded.

   Alberta's industry has strengths in beef and pork production due to the Canadian grading system and genetic foundation that the industry is built on. Canada has a positive image in the eyes of foreign consumers. Canada's diverse heritage gives unique ethnic products that have potential as they fill particular market niches in the U.S. Canadian packaging is mediocre and a major problem for success in all markets. Value-added products, as exports, are less politically vulnerable in the U.S. than are base commodities.

The commodity attitude will no longer work and will continue to create problems of surpluses for all countries. More venture capital available to the industry is needed. Product value is of more importance than price alone.

The industry, including the producer, must find a way of using the new information systems available to more promptly respond to market needs.

3. **Exporting - How We Can Do It Better - Dr. Jim Youde, Executive Director, Western U.S. Agricultural Trade Association:**

Canada and the U.S. are good competitors in international markets and also are important markets for each other's industries.

Exports are critical to the agricultural future and growth of the North American industry and if success is not achieved then our industry will have no choice but to down-size. There have been a number of major successes of the U.S. industry, not only in third markets but in working with Canada to maximize the opportunities from each of our industries to each of our agricultural communities. The industry cannot write-off any opportunities without some degree of exploration.

Value-added food products demand is rapidly increasing aided by the current falling U.S. and Canadian dollar vis-a-vis other currencies.

The keys to exporting are market targeting, emphasis on product quality, reliable supply, market presence over long-term time frames, and product promotion in the marketplace. Price must be in the "ball park" but with value-added products it is not the primary consideration. We must work at improving trading climate - removal of trade barriers and border irritants between countries, particularly the U.S. and Canada, and we must resist protectionism as North American agriculture will be the big loser.

Canada and the U.S. need to pursue two-way trade to keep trucks full in both directions. We must make long-term commitments to exporting and do it in an innovative manner such as tying it to tourism. We must emphasize value-added processed products with the Japanese market appearing to the U.S. to be almost a boutique market.

4. **Producers' Role in Exporting - Walter Paszkowski, producer, Sexsmith.**

Marketers must accept that producers will be more involved in their activities. This involvement will be to:

(a) Project to customers a cohesive support industry to supply their needs;

(b) Allow producers to manage to meet market demands;

(c) Be supportive in a consultative role to the marketers, not generally as a direct participant in selling.

Alberta's industry must learn how to work together to achieve common objectives. We must let the professionals do the marketing and selling job with responsible producers involved in market identification, customer liaison and market development. The producer will advise his colleagues at home of market potential and will explain producer requirements to customers to identify why supply shortfalls take place.

The producer is the foundation of the food system in Alberta and close cooperation with exporters is imperative. Customers want a cohesive supply system. Conflicts must be removed from the system. The European Community's Common Agriculture Policy is an example of a food system working together.

The producers' role is consultative and supportive in the marketplace including inputting into policy formulation negotiations such as the GATT and communicating both to customers and back to other producers opportunities and the importance of supply consistency and quality.

5. Summary:

Alberta's agriculture and food products industry's opportunity is to produce value-added products to meet the demand of consumers in Western Canada, Japan and the Western United States. The implications of this will:

(a) Be more farm products sold to domestic processors to serve foreign consumers;

(b) Create a need for better understanding and planning to meet a much more dynamic market;

(c) Necessitate producers and producer organizations being involved in the marketplace as catalysts;

(d) Mean that Alberta will market internationally animal and plant genetics, canola products, seed potatoes, fresh and processed meats, further processed products, etc. - value-added products.

(e) Force Canada to improve not just food product quality but our weakest link - our food product packaging;

(f) Necessitate that the industry must bring itself together to approach its future challenges as a cohesive unit.

"Land soil and water resources - the Alberta Advantage"

Reporter: Eric Horton, Regional Director,
Alberta Agriculture Lethbridge

Dr. Art Olson, Alberta Agriculture, in providing a Provincial Overview noted that land, soil and water are long term resources, in their natural states are renewable resources. However, they are no more renewable than coal or petroleum if they are not managed properly.

Agricultural growth will probably continue and it is likely that expansion of agricultural land and intensification of production on existing land will take place, depending upon markets which can be influenced by free trade and the elimination of the balkanization within Canada itself. There is a real potential for a considerable increase in our agricultural productive capacity due to technology, expanding the existing land base (possibly 9 million additional acres) and intensifying production on some 22 million acres. The resources of people, the technology and infrastructure are in place to allow an increase in production by 70% if the situation in the future warrants it.

Land use planning processes affecting private land are determined by the Planning Act and appropriate agencies at the provincial, regional and municipal level. For public land it is carried out through the consultative process called Integrated Resource Management Planning. The planning and allocation of water is vested in the Department of Environment via the Water Resources Act. Alberta Agriculture, the Alberta Irrigation Council and Irrigation Districts are involved when particular agricultural concerns arise. The planning process is probably best served by long term, reasoned planning and gradual change.

Where can expansion or improvement of land take place? Dr. Olson discussed eleven areas for consideration and action in the future. The issues reviewed are not clear cut nor are the solutions simple. There are soil and water conservation issues, land intensification and expansion issues and associated concerns.

Mr. Henry Kroeger, M.L.A., and Chairman of the Alberta Water Resources Commission, stated that water management is inseparable from land management. Water throughout Alberta presents unique problems in different areas because of regional characteristics. For example, in the South water drains rapidly whereas in the North it sits, and because of the type of soil causes severe erosion. The south half of the province, where most of the population is located, has 13% of the water; while the north half, with a considerably smaller population, has

87% of the water.

Water, an essential resource, is as important as energy and will require the same management and attention as energy. Drainage presents a different problem than irrigation in that it does not lend itself to major projects. Water use, relative to economic development must pass the test of economic viability. Therefore a wide range of assessments will be made prior to final decisions.

Hon. Don Sparrow, Associate Minister, Public Lands and Wildlife, began by stating that the various industries, recreational users, farmers, ranchers and others were putting increased pressure on public lands. The objective of his department is to maximize the use of these resources.

In order do this eight changes have been implemented, which deal with extension of leases, farm development leases, payment for purchases, improvement of grazing reserves and conversion of grazing leases to farm development leases. A major change in land allocation allows for draw, tendering, and auction of public land. All of these changes are designed to encourage or increase the viability of farms and ranches and to enhance the security and equity base of producers.

Mr. Sparrow discussed in detail the problems and opportunities of expanding the agricultural land base from the green zone and the necessary involvement of several government departments and the associated capital costs.

Changes in the management of wildlife, a major contribution to tourism income, have been changes designed to ensure the improved compensation to farmers and ranchers for wildlife change. Waterfowl habitat was discussed detailing Wetlands for Tomorrow, a joint undertaking with Ducks Unlimited; and North American Waterfowl Management Plan, a joint federal, provincial and United States program designed to improve the overall management of wildlife.

John Vos of Keg River gave a vivid history of his farming career in Alberta. He detailed the development of green zone land. His description of the development process, over time, clearly illustrated the necessary requirement of other income sources.

His discussion of present land development costs outlined the nonprofit prospects, for several years, facing anyone embarking on a farm venture in his region. The questions he raised about the prospects new farmers face, the resources they require, the family support they rely on in order to be successful over time, requires some constructive thought in view of current and near term economic prospects. Nevertheless, Mr. Vos was positive about land development as a means of increasing agricultural production, provided the income opportunities were available and the infrastructure was in place.

Dr. McGill, of the University of Alberta illustrated the marked change in Alberta's soil capability to produce and also the detrimental changes in the soil's physical properties. His description of various governmental policies that do not consider the effect that they have on soil and its ability to remain as productive as it was clearly calls for a re-evaluation of these policies.

Dr. McGill noted that:

1. Agricultural economic productivity is declining.
2. Land degradation contributes to increased input costs and reduces ability to rebound from recessions.
3. Soil conserving systems can reverse degradation trends, reduce risk and lead to greater economic productivity.
4. Soil conserving systems require an integrated agriculture developed around the unique attributes of the resource base for each soil climatic region.

He listed five major concepts involved in soil conservation.

R: A resource based system to optimize the use of unique resource characteristics, and to ensure that political policies are in harmony with resource conservation.

I: An integration of the agricultural system to meet agriculture's goal and effective use of resources to generate a finished product.

M: Market development to create a broader opportunity base for primary production and hence greater opportunities from unique resource characteristics.

E: Education of the public and producers with improved primary, secondary, and post secondary resource-based educational programs to test/demonstrate integrated systems with more complete Soil/Land inventory data, more agroclimatic data and improved data on the interrelations between soils, plants, and soil-plant manipulations.

D: Diversification to help reduce risk and optimizes use of the resource base.

In response to questions Dr. Olson noted special crops need to get full benefit of irrigated lands which requires more research. Mr. Kroeger noted that no diversion related work on the Peace River is being done at the present time.

In response to a questioner who suggested C.L.I. 4 soils are underclassified relative to their productivity, Dr. Olson noted soil inventory is a national system, the scale at which it is available is not suitable for detailed planning, and improved soil survey and climatic information are needed.

In response to a question about the layout of roads in the developing areas of the green zone in order to assist with drainage and a designed drainage grid, Dallas Schmidt, noted that this was " worthy of consideration" and Hon. Don Sparrow stated that these possibilities were being considered.

“Food processing - a growth industry”

Reporter: Frank Fallwell, Calgary

Mr. Minister, you must be congratulated on calling this Agriculture Conference. You have come forth and asked for input from all segments of the agriculture community. I know you will be very open minded as to the answers you will receive. You must be very open minded - otherwise why else would you ask a fish monger from Calgary to come to Edmonton to address this august body of cattlemen, beef processors, hog raisers and chicken pluckers. Thank you, sir, never once was anyone made to feel like a fish out of water.

Your theme “Second Century — Opportunities for Agriculture in Alberta” was aptly addressed by our four knowledgeable and talented speakers in the session entitled “Food Processing — A Growth Industry”. Attendees at this presentation heard echos of the same message emanating from other sessions. Presented in different styles, different ways but always the same message. Markets yes, but quality! Potentials - yes! But work and commitment to excellence are involved.

We have the opportunities available to us, we have the knowledge to start, we know our resources but do we know what the market place really wants. We must venture out into the province, the dominion, the world to find out exactly what our customers and consumers want to purchase. We must become more quality conscious, more market place oriented. A major move must be away from commodity trading and into value added processed food marketing. Our agri-food processing industry is indeed in a growth position. To optimize on this growth position we must listen to the market place, we must react to what this message is telling us. As food processors, we have many things very much in our favor - clean air, clean water, knowledgeable people, good quality agriculture base products from which to build a firm agri-food processing industry.

The dangerous suggestion that we down scale or curtail our agriculture output to satisfy only our domestic consumption was quickly put to rest. We must export our products to the rest of Canada, to our trading partners in the U.S.A., Pacific Rim and the E.E.C. To do this producers must have a happy marriage with processors and marketers. Producers must become more active in the marketing of their products. Still all members of this consortium must be willing to investigate from field to table every aspect that makes up this profitable chain of marketing. They must be willing to share too, expenses and the profits. It is not the sole responsibility of any one segment that the weight must be shared equally by all players.

Niche marketing, specialization, value added - we must sell the cookies, T.V. dinners, ice cream, the candies - not just our wheat, meat, milk and honey, is what we heard. Ninety per cent of all agricultural processing taking place in Alberta involves processing of primary commodities yet the secondary spin off from a growing food processing sector can be as valuable as the processing itself as recognized by Dr. Ballantyne's address.

How can we do this processing? It takes money, education and talent. Mr. Mather outlined a point (which was challenged by a member of the banking community) that the demise of two western Canadian banks means less bank lending capacity in Alberta. We have in fact become too reliant upon debt financing by banks instead of equity financing. The introduction of Vencap Equities Alberta Ltd., Small Business Equity Program and the new Alberta Stock Savings Plan are three new programs of significant use to the new processor. In two short years Vencap has placed $52 million in 19 Alberta based ventures. It is currently accounting for approximately 1/3 of all venture capital activity in Canada in spite of the fact that Vencap's focus is on Alberta which accounts for less than 10% of the nation's population - 43% of their venture capital portfolio is agriculture oriented. So you can see their commitment to this field is significant. This commitment is existing agricultural ventures as opposed to high risk, hi-tech fields raised the interest of more than one listener. Is Vencap correct in its direction? Something worth investigating! Mr. Mather proposes that sources of equity or ownership capital will replace sources of debt - chiefly from the banking system. The new financing of Alberta based enterprises therefore will be much sounder than in the past and Alberta secondary industry will be much stronger as a result. This is most important when you take into consideration that most new products and many processes of the last decade were developed by small firms. Small firms that may now have a better chance of maintaining in the market place. This must be encouraging for our fledgling food processing industry. Financing is only one of the many important segments necessary to sustain life in the market place. Alberta must develop the technical skills required to process these products intended for our new found markets. Research and technology must be intensified if we are to be successful in our off shore quest.

Mr. Mehr outlined a myriad of support systems already in place federally and provincially. Grant financing, export market development, business opportunity sourcing, machinery programs, small business counselling, nutritive processing assistance, through to food laboratory services are all able and willing to participate. So where do we go from here?

We must become more sophisticated, professional and planned marketers and salesman. We must use the messages from the market place to direct our industry development. We must listen to the Mr. & Mrs. Consumer and their 1.9 children when they say they want quality, attractive, easily prepared food that is nutritious and convenient that can be purchased in a food boutique with a coupon from a cross sold product. As Doctor Heffring points out, producers and processors must learn to touch the consumer's "Hot Button" when they are marketing. We also must learn that our consumer is not just in Alberta but Canada and through out the world. Somehow we Albertans must overcome our inherent shyness and be prepared to proudly market our processed, value added agri-food products to the world market place. As we look to a more liberalized trade agreement with the United States, we must put all our agricultural products on the table and negotiate with aggression from a position of pride.

We do have problems in cost efficiency. One direct question posed by Mr. Morgan of Sundre was that of the energy cost to the farmer, and the fact that 85% of the farm production cost is directly related to energy cost. That the percentage cost/return ratio has broadened so significantly that in 10 years returns on grains have doubled while energy costs have increased by 20 fold. Hardly an equitable situation if we alone face such percentage changes and the other world communities do not. A solution to our overproduction was proposed. Open our immigration borders to the population of the world. They can consume all our excesses. How would they come, who would pay and what they would be profitably employed at was unfortunately not addressed.

Ladies and Gentlemen the bottom line to the question on opportunities for agriculture is stated in two words - pride and sell. If we have pride in our products, if we have given our own Alberta products preference over imported products, if we can only instill in all segments of our agri-food processing and producing community that feeling of pride, we will radiate this is what we want to sell.

Once we have pride in quality, reliability and value in our Alberta products we will have little trouble in marketing.

We must start at home to buy our Alberta products first. We must learn to "Be Choosey". Once we have convinced ourselves we are number one, we will have little difficulty in convincing our customers.

With pride in place the sale will easily follow.

"Farming for profit with human resources"

Reporter -Catherine Ward, Olds

This report will give you a brief summary of the information Dr. Walker presented on stress and the farm family, and will discuss some solutions and conclusions that were drawn from the session.

We have all experienced stress. Dr. Walker differentiates between:

- a **stressor** - anything that places a demand on us from the environment, i.e. market and weather reports, government
- **stress** - the internal reactions produced by our reactions to demands placed upon us.

Dr. Walker discusses how the past decade has been a particularly challenging and trying time to be a farmer. The combination of economic conditions and weak markets for agricultural products has provided a significant source of economic distress for farmers. The extent of the economic distress being suffered by farmers is revealed in recent bankruptcy statistics by the Consumers Affairs Department. A record number of 551 farmers underwent bankruptcy in 1984. Farm foreclosures are at a record level and 22% of the farms serviced by Federal Farm Credit Corporation are on the verge of failure. A national survey conducted by FCC in the summer of 1984 suggested that 39,000 of the nation's 228,000 farmers are in moderate to severe financial difficulty.

Dr. Walker believes that we can stereotype farmers as perceiving themselves as independent, rugged individualists that can't admit or find it difficult to admit, that they are experiencing stress that they are having difficulty coping with.

Symptoms of high stress include: insomnia, ulcers, tension headaches and family conflict.

Dr. Walker states that farmers ARE unique in their stressors:

1. The obvious feature about the farming business that is unique is that it is a FAMILY OPERATED and BASED ACTIVITY.
2. Multi-generational farms are a stressor.... differing viewpoints and management techniques.
3. Another key stressor is the wide seasonal variations..... the weather.
4. Income is irregular.
5. The isolation from support systems.
6. The big thing is the EVERY-DAYNESS of living on the farm.... ALWAYS BEING THERE.

Much of the stress that is experienced on the family farm is inter-personal in nature. There is this inter-personal dynamic that involves family decision making, based on an inter-dependence among extended family members. Who's got control? of what?

The role of farm women is unique. They carry more stress than farm men as they carry the dual role: FAMILY MEDIATOR and WORKER. She experiences time conflicts. She has arguments with her husband about "JUST WHAT IS MY ROLE?"

She **is** the husband's support system. A supportive husband that will reciprocate **that** role of support person significantly decreases the stress on the farm wife. If the husband participated in some of the house maintenance tasks it would alleviate much stress from the farm wife.

There are three stages of the body's reactions to stressors:

> ALARM REACTION - this response is often referred to as the fight or flight syndrome. Your whole body has become alert and ready to respond.
>
> RESISTANCE STAGE - if you continue to be exposed to stressors, your body begins to resist and your body system remains hyped up and never returns to baseline levels. (e.g. your blood pressure may rise and stay elevated).
>
> EXHAUSTION - following long-continued exposure to the same stressor the body's adaptation energy is eventually exhausted and the signs of the alarm reaction reappear; but now they are irreversible and the individual dies. It has been demonstrated that longterm stress or the chronic presence of stress related hormones in the body eventually reduces its ability to resist disease. The immunological system begins to wear out.

We all need some stress in our lives or we would be unmotivated. There are four general areas of farm stressors:

1) PERSONAL, e.g. Personal injury or illness, change in financial status, change in habits (alcohol, exercise, nutrition, drugs, tobacco, sleeping, slocial activities.)

2) FAMILY, e.g. Death of a spouse, new family members, separation/divorce, parent-child tensions.

3) WORK, e.g. Debt, crop failure, low prices of commodities, machinery breakdown.

4) ENVIRONMENT, e.g. Neighbours selling farms, moving, seasonal changes, vacation/holiday.

Major stressors of Alberta farmers that were identified by discussion groups of those present were:

1. Uncertainty of weather
2. Financial concerns
   - high input costs of doing business i.e. energy

  - cyclical nature of market prices
  - high debt load
  - narrow profit margins
3. Family farm management
  - reaching decisions
  - financial planning and budgeting
  - inter-communication
4. Farm machinery breakdown
5. Vacations

Solutions which were identified by the discussion groups were:

1. Provision of seminars/forums/or workshops
  - topics requested most frequently were:
    a) stress management
    b) family communication skills
2. Education
  - providing training aids
    a) slide shows
    b) films
    c) publications
    d) courses by mail/teleconferencing
    e) better financial information
    f) access to counsellors

  - Public awareness of stress involved in farming.

Participants rated themselves on how well they used what Dr. Walker calls their "farm" skills:

F - for family support skills
A - for assertive communication
R - for relaxing skills
M - for management of self skills

Generally, the participants felt that

1. They used these skills well sometimes
2. They require work on their assertive communication skills
3. They were reasonably good at relaxing...... sometimes

In conclusion I believe that this topic area is not only ignored in our farm homes but the industry itself has problems addressing the maintenance of "the human machinery" on the family farm.

“Agricultural education - harnessing new technology”

Reporter: Dr. Jerome Martin, Independent
Research Consultant, Edmonton

Eric Jensen, chairman of the Board of Governors, Olds College, and President of Jensen Engineering Ltd., spoke on, “Engineering Development and the Role of Agricultural Colleges.” He noted the two key elements in any technological innovation were: 1) Will it work? and 2) Will it Pay? Because there are many sources (public, private, university, government, farmers) for training in “leading edge” technology, Jensen proposed a “centre for the demonstration of agricultural technology.” He stated that private industry is prepared to fund this proposed centre on a cost-share basis. He listed the areas in which technologies were, “waiting to be demonstrated by private research companies:”

1. New Cropping Techniques
2. Variable Fertilizer Application
3. Electronic Seed Cleaner
4. Integrated Water Management
5. Low-Cost Trout Hatcheries
6. Zero-Till Drills
7. Renewable Energy Farmstead
8. New Solar and Wind Energy Equipment
9. Remote-Sensing Crop Monitoring, and
10. Computer and Microelectronics

Jensen suggested also that the proposed centre could summarize and disseminate information.

Dr. Stephen Acres, Director of the Veterinary Infectious Disease Organization of the University of Saskatchewan, spoke on, “Vaccine Research and Development for the Livestock Industry.” The problem entails losses of livestock and poultry in the area of $1.5 billion a year in this country. The most costly diseases affect the respiratory, enteric and reproductive systems.

He described several new methods of providing immunity to complex diseases:

1. Genetically Engineered Vaccines (a fascinating and exciting area)
2. Multi-Component Vaccines
3. New Vaccination Methods

4. New Adjuvants
5. Monoclonal ("Tailor-made") Antibodies
6. Immunomodulators and Immunoregulators
7. Anti-Viral Drugs, and
8. Vaccination to Improve Productivity (Immunizing against hormones)

He concluded that, "a variety of different products used in combination will give - more flexible, and hopefully successful immunization procedures", but stressed that these techniques must be accompanied by improved management.

Dr. James H. Helm, Head of Crops Research Section, Alberta Agriculture, spoke on, "Crop Development and Technology." He stated the dilemma as to which comes first: research results, or society's decision to fund research. He sees the change to a long term approach to research funding in the plant science research area as a refreshing change. Helm says that the genetic potential of crops will be expanded to achieve 100 to 200% increases in yield. He notes that there is already technology that is not being fully utilized. He believes that the long term solution is more industry input, less government control, and more reliance on producer associations. He sketches four major research objectives for the next 10 to 20 years:

1. Forage Crop Production and Management - essential for the stabilization of the livestock industry
2. Intensive Crop Management and Production Systems - essential for keeping annual crop producers competitive
3. Germplasm Conservation and Development - to prevent the destruction of genetic resources, and
4. Soil Conservation and Management - to guard against further degradation of this important resource

He agreed that government, business and producers must cooperate to develop and transfer new technologies.

Dr. Fred Wolfe, Chairman of the Food Science Department of the University of Alberta, spoke on "Product and Process Development for the Food Industry." He sees progress coming in the areas of: "Genetic manipulation of bacteria and other microorganisms; Enzymatic modification of animal and plant material; Manufactured food analogues, and Alternative methods for food processing." He emphasized his personal belief that in order to fully realize our potential in these areas of frontier technology, the food industry, "needs trained personnel. University and Technical school graduates are essential to the industry." He concluded that it is these very people who will identify the problems and come up with the profitable solutions in the second century. Dr. Wolfe identified three critical ingredients for progress: basic research by University, Government and the Private Sector; plants and factories staffed by trained professionals; and a progressive management, supportive of its researchers.

In response to a question from a producer on manufactured food analogues, Dr. Wolfe stated that "consumer tastes are changing; we must be ready to follow those changes."

Harry D. Haney, a farmer and consulting agrologist for Peat Marwick, spoke on, "Technology Transfer Needs from the Producer's Standpoint." He outlined the past and present situation of the family farm producer, noting, "the rules of the game have changed somewhat in the past few years. Production oriented research by itself is not enough today, and it won't be enough in the future." He observed that there is an ever-increasing need to put more emphasis on the financial aspects of farm management. This tool will be essential to making the family farm profitable in the second century. In that century, Mr. Haney sees that:

1. Continued Production Oriented Research;
2. More Concise, Accurate, Timely, and Accessible Market Information;
3. More Innovative Financial Management;
4. Increased Reliance on Specialists; and
5. Increased Computer Application, will be paramount.

In conclusion, Mr. Haney noted, "I think everyone who has an interest has a role - governments, banks, implement companies, chemical companies, feed companies, the legal, accounting, and consulting professions, and probably most importantly, the producers themselves."

Dr. James P. Mahone, Secretary of ARCA, Director of the Research Division, Alberta Agriculture, spoke on "Farming for the Future and the Department Extension Program". He saw a change in frontiers from farming the geography of Western Canada 100 years ago, to developing and utilizing fully the frontier technology of today and tomorrow. He summarized the efforts of Alberta Agriculture in this regard, citing Farming for the Future as Alberta's major agricultural research funding program. The On-Farm Demonstration Program, established in 1982, supports demonstrations to transfer the new technology to producers. He noted that these and other programs are supported by Alberta Agriculture's network of qualified extension staff. Mahone emphasized that producers are involved in the research funding decision-making process. He predicted that three new technologies will influence agriculture in the next 100 years: biotechnology; computers; and robotics. He identified several areas or needs, as well: a reliable source of long term funding - the Alberta Agricultural Research Institute; more involvement of researchers with farmer-producers in field demonstrations; and a greater private industry participation in research.

A producer stated, after Dr. Mahone's presentation, that he would contribute directly to agricultural research but that, at the moment, there was no mechanism for him to do this. According to Dr. Mahone, the proposed Agricultural Research Institute would allow private research funding to be used in conjunction with public funding.

"Individuals in domestic and international markets - the USA opportunity

Reporter: Dr. Linda Chase Wilde,
Department of Rural Economy, University of Alberta

The two papers in this session - one by Chris Mills and the other by Bob Binnendyk - address and do justice to the topic "Individuals in Domestic and International Markets - the U.S.A. Opportunity". But is it the U.S.A. **opportunity**? or the **U.S.A.** opportunity? The first interpretation reflects Canadian optimism over the idea of free trade; the other expresses the fears associated with it.

Conference organizers chose well to have these two competent people give us their respective viewpoints of the 'free trade' issue; Mr. Mills from the Alberta livestock and meat perspective and Mr. Binnendyk from the Canadian brewery perspective.

Despite apparent differences in viewpoint, both share in common a firm grasp of both the potentials and the problems in a Canada/U.S. free trade agreement. Both see the debate as a **process** - as a forum through which change will occur over the long run. This is, I think, an important similarity. Further, both recognize the necessity for putting economic analysis into perspective; there are political, or **people** factors which are equally important in the trade debate.

Mr. Mills set out the choices for us:

1. To work toward freer trade with the U.S.
2. To strive to maintain the "status quo", and
3. To pursue what our last prime minister called "the third option - i.e. markets other than the U.S.

Chris concludes that the middle option - that of maintaining the status quo - is not viable. Conditions change; conditions which are beyond the control of even the best efforts of individuals or groups. Yet, this appears to be the preferred option of Mr. Binnendyk. I will return to this in a moment.

Mr. Mills also argues that the first and third options are not necessarily mutually exclusive. In fact, at times they may be complementary. For example, by improving the scale of operation in Canadian industry in response to a larger U.S. market, we may be better able to penetrate markets other than the U.S.

This leaves option one: the pursuance by Canadians of free trade with the U.S. - at least for the livestock industry. Mr. Mills did not forget, however, to acknowledge that there are costs to pursuing this avenue for action. And he did not pass judgement on behalf of all Canadians on the cost relative to the benefits. With growth there is adjustment, to some more than others. This brings me to the next paper.

Mr. Binnendyk focuses more on the costs of free trade with the U.S. to certain Canadian agricultural industries. Both speakers agree that, were 'free trade' to occur, Canadians would face unemployment, labor displacement, and some form of 'identity' crisis.

The reason Mr. Binnendyk chooses the status quo option is because he feels his industry, the Canadian brewery industry, will suffer more from these problems than others. He is not likely to disagree that there would be winners as well as losers from choosing option one.

Mr. Binnendyk shows great insight into the roots of these potential problems faced by his industry. The structures of the U.S. and Canadian industries are different, for example:

- One large scale and concentrated; the other small scale and fragmented;
- One faces "unregulated" ("world") market prices for a major input, malting barley; the other a "regulated" price, strongly influenced by the CWB; and
- One has a decentralized marketing system; the other centralized through provincial liquor control boards;

It is important to note that the two speakers in this session do not share totally different views of the way the world works. However, their first step towards free trade begins at a different place.

Ensuing comments from the floor were lively. In response to Mr. Binnendyk's plea for 'fair' trade rather than 'free' trade, Mr. Biggs from Coronation asked: "Who guaranteed that life is fair?" In replies, both speakers referred to the factor of time needed for adjustment to occur. Mr. Binnendyk would prefer that some structural changes begin **before** the brewing industry is included in free trade discussions. Mr. Mills, on the other hand, is ready **now** for livestock trade to be negotiated. In fact, in answering questions from Mr. Gordon from Manitoba and Mr. Grabvac from Raymond, Mr. Mills underlined that the Canadian livestock industry already enjoys a comparative advantage in U.S. markets and that, further, the U.S. government (through not all U.S. farmers) are ready to negotiate.

In answer to a question from Ron Chalmers, Edmonton, as to how long the brewing industry would need to adjust, Mr. Binnendyk replied that some changes would and could occur immediately and that, given the right environment, long run adjustments could be completed within ten to fifteen years. Neither speaker directly addressed the thorny problem of what and how compensation to losers would occur - and neither will I.

Two questioners, Mr. McGivern from Calgary and Mr. Strickland from Edmonton, asked about specific constraints to livestock trade. One dealt with the U.S. perception that the Western Grain Transportation Act is subsidy to Canadian cattlemen; and the other with a similar concern over the method of payment of the 'Crow' benefit to the railways. Mr. Mills felt that both these issues would be on the agenda of any free trade negotiations, assuming agriculture itself is on the agenda. Canada must recognize the key to all negotiations: the principle of compromise.

A final question came from Mr. van Arnam from Carstairs who was concerned that the present egg quota system in Canada would go if a free trade agreement were reached. Mr. Mills pointed out that there are likely to be specific industries in both Canada and the U.S. which will be non-negotiable, at least for the time being. The feather industry in Canada and the sugar industry in the U.S. are prime examples.

Concluding remarks

Hon. LeRoy Fjordbotten
Minister of Agriculture

Thank you for that very kind introduction.

Special Guests, Ladies and Gentlemen:

What a Conference!

What an Experience!

You know, a lot of people have come up to me and said, "Mr. Minister, thank you for your conference."

But, this wasn't my conference, it was our conference. Remember, in my opening remarks I said this would be a **WE** conference. That's because it is only by we working together that our agriculture industry will be able to maintain its strength and build on our natural advantages.

The reason this conference went so smoothly was that there were excellent people behind the scene, in other words, those on the steering and the organizing committees. It's a unique experience when you have people like that who are prepared to put out such a terrific effort. I would like to recognize them for their efforts.

I would also like to thank the media. The ones who are here today are the ones you can count on — the people who attend a conference, don't get the speeches ahead of time but listen to the actual remarks, and then report them accurately without getting things screwed up. Therefore, I would like to compliment them.

Over the last 48 hours, ladies and gentlemen, I've heard a lot of optimism, received more practical suggestions and witnessed more pride in agriculture than I could ever have hoped for at this conference.

Starting from the first introductory session on Monday afternoon through to the final reporting session just before lunch, I saw a gathering of concerned people who make me feel very optimistic about the prospects for this industry's second century.

Individually, I saw in you the incredible diversity of skills, and outlooks, and talents, and experience, and knowledge and ambitions which are essential to future progress in all the sectors which make up Alberta's agricultural industry.

Collectively, you also have special qualities, of which the most important is that you are a group who cares. I also care about the future of our industry, and I want you to know that too.

Believe me, throughout this conference, I've heard you, and it's very, very satisfying to know that there are several hundred people here, and thousands of people outside of here, who have a deep, personal commitment to agriculture — the commitment that both you and I feel.

I said yesterday morning, that in looking at agriculture we would have to do it together — if this conference was to succeed.

Did we succeed?

As I'll explain later, I'm going to ask each one of you after you go home to answer that question, keeping in mind that this special conference was specifically intended to direct our attention at one vital question — where are we going?

Right now, if we review each one of the sessions and events held since Monday noon, I think you'll find that they all contributed significantly to our understanding of the problems and obstacles which lie ahead. I think you'll find that each one also offered glimpses of the various options available to us to meet some of those problems and obstacles head-on.

I would like to share with you my perspective on the different sessions and events of the last 48 hours.

One impression which was left after the reporting session is that there was a very high degree of participation in each one of the sessions, which is something we all really wanted to achieve.

Some of you said, "I wish I could have got to the mike more often." You know, you can see further back with tears in your eyes, than you can see forward with a smile on your face. In other words, when you go home, if you've got some thoughts, write them down, and send them in, because they're important.

This conference doesn't end at noon today. In fact, it is really just starting. We must carry the message of this conference even further afield, and I expect that of you.

The individual speakers all came up with suggestions and challenges for the future, not only for the future of our agricultural sector, but also, to some degree, for the future of all Albertans.

Listening to the various sessions and listening to the final reports before lunch, I heard a number of common themes. I would like to highlight three.

Number one: the movement toward integrating the various segments of agriculture. It became increasingly clear to me that there's a trend to view agriculture as a production chain, from farmers to processors to consumers, rather than as a collection of separate entities, each one with separate goals and separate aims that it wants to achieve.

I think what came out clearly is there has to be a happy marriage in the industry, but in some areas, a marriage counsellor will be needed to solve some of the problems.

Happy marriages are known to reduce stress — we heard about the stress placed on farm couples — and a happy marriage will reduce stress because each partner gives adequate support to the other.

I especially noted the remarks that were made concerning farm husbands doing household chores in order to assist their wives in reducing their own stress levels.

You know, doing dishes is marvellous therapy. I know that because my wife throws a dish towel at me when I go home: it's amazing how quickly you forget some of those big problems when you're worried about dropping the pots or breaking the china or making sure the garbage barrel doesn't start a fire in the yard.

The concept of a happy marriage extends to other aspects of agriculture, such as the intensification that will be required to expand our production. To achieve that, I think, will require ever better relationships between producer and researcher and those who understand the developing needs of our agricultural industry.

I also noted a perception, brought up by a number of speakers, that high quality more than low prices would be important to our long term marketing efforts.

Also in terms of marketing, we must overcome our shyness. You know, as an industry we're so shy about what we do. You hear and I hear all these people out there tooting their horns. But, they don't even have dual horns — you just hear a meep meep.

Collectively, we've got something to blow our horn about. We have the strongest agricultural sector in the country right here — I think, it's even the strongest in North America. We've got the best people; we've got the natural advantages; we are leaders, and yet, we're hiding it.

What do you need to be a leader? You've got to have vision. No one is going to follow you if you don't know where you're going. You must be able to communicate. You must be able to inspire, and you must have integrity.

I can list a whole lot of things you must have. The fact is we've got them all, but we hide them. Don't you think it's time, ladies and gentlemen, to stand up and toot our horn.

Number two: we need to take a careful look at financing.

I'm worried. The Agricultural Development Corporation has 26% of the long term farm credit in Alberta. That scares me. I think it's fundamentally wrong. I think there has to be a better way.

One of the unique things which I thought occurred during the sessions was ... You know, five years ago — when Dallas Schmidt was Minister of Agriculture, and certainly when Dr. Hugh Horner was Minister — if someone had got up at an agriculture conference and talked about equity financing, people would have lined up at the microphones to shout him down.

What happened here? There was an interest shown in equity financing. Times have changed, and we need to understand that there is a greater awareness among agricultural people that they want to know where we're going as an industry.

However, to provide that direction is going to require careful consideration. In terms of farm financing, that will come in the near future. The farm financial situation and farm credit needs are going to be my priority over the next few months.

Are they going to be yours?

Everybody says, "Mr. Minister, you've got to do something." I say, "What?" And they say, "I don't know, but you've got to do something."

In agriculture, it's not me, it is not I, it's we, acting together as an industry and as people to recognize the problems and to work together to meet some new goals.

There is a challenge in that. If you don't sense that challenge, then you were one of those few people I heard snoring in the meeting room.

Number three: Where do we go from here?

People expect government to give answers, but the private sector has to provide some of those answers too.

What are you going to do with the results of this conference? I'll tell you what I'm going to do.

The first thing we, the organizers, are going to do is put together all of the papers that were presented into a package. As well, we're going to print a summary of the reporting session just before lunch, and we're going to print my wrap-up remarks too. And we're going to have that whole package ready for distribution.

Now, if you're doing your job, when you go home, there's just got to be 10 people in your area to whom you can say, "Come on, cough up five bucks and send it in, and get this thing." Believe me, it's cheap; the paper alone costs more than that.

Then we'll have some discussion and we're going to work together in this industry. Now, if each of you works with 10 people — you know, we might have something. I'm going to do it. Are you going to do it?

If we're going to make progress, we've got to have feedback. That process is up to you. You could say, "Mr. Minister, what are you going to do as a follow-up to this conference?" The Minister's asking you: What are you going to do as a follow-up to this conference?

We have a position paper on agriculture coming out. In this room there are people from the private sector who are working with me on that paper. What are you people going to do about that? Are you going to help, offer some ideas and some thoughts, and put together something we can put in that paper? If you don't, then don't criticize the position paper when it comes out.

My good friend Don Sparrow, Associate Minister responsible for Public Lands and Wildlife, says never criticize somebody else's idea unless you put something better on the table. So, if I hear any criticism from any of you, I'm going to look up and see if you were at the conference. If you were, then I'm going to have a word with you.

Ladies and gentlemen, these last couple of days have been challenging ones. We came here for a purpose, and we worked hard and we worked well together to achieve that purpose.

We, together. Remember, it is we, not I. We worked together. Look at the word 'we' — 'W' 'E', for work and effort, work and effort on behalf of we who will make our agricultural industry strong.

We have worked together to identify goals for Alberta's agricultural industry and to determine the ways we can achieve those goals. Our success can be measured to some degree by the events of the last 48 hours. By my reckoning, Second Century — Opportunities for Agriculture has indeed been a success.

What I'll be hoping to learn in the next few weeks is how each one of you has judged the conference. An evaluation sheet will be mailed out. I urge you to fill it out and mail it in. Your feedback will be important to the planning process.

In conclusion, I would like to extend my wholehearted thanks to each one of you who participated in the conference. This has been an ambitious undertaking and a unique experience. We brought together in one place for 48 hours farmers, agri-businessmen, specialists and representatives of the government, and we focused our collective efforts on one issue, the future of agriculture in Alberta.

This government and industry-wide communication and consultation has brought the future within our grasp. If we reach for the stars, and we don't reach them — so what, we're still going to get some stardust on our hands.

We set out to establish goals and priorities, to identify potential areas of concern and openings for progress, and we've succeeded. There are indeed tremendous opportunities for agriculture in its second century.

Like the old saying goes — you ain't seen nothing yet. I hope the roads are good. Drive carefully. God speed.

Thanks!

Results of additional topic survey of conference participants

In response to the request in the Second Century registration brochure for suggestions about an additional subject to be covered at the conference, the organizers received 46 suggestions from about 200 people who had registered by October 18. The suggestions were reviewed. This review demonstrated the broad range of issues facing agriculture today. The 46 responses included requests for in excess of 30 different possible topics. A number of suggestions, particularly in the area of agricultural finance and the free trade issue, that received the support of a number of people, will already be addressed at this conference.

Some topics suggested would appeal to a small number of the people in attendance at the conference. Examples of this include fish farming and opportunities for steel manufacturers. Examples of other suggestions made by a few people included the future of the family farm, balkanization in Canadian agriculture, how to reduce farm input costs, and increasing the producer's share of the consumer dollar.

However, as there was no individual subject that received the support of more than a few of the respondents, it has been decided not to add an additional topic to this conference. We have recorded all of the suggestions received and will use them in the development of future conferences of this type. We wish to thank the respondents for their time and thought in suggesting possible topics.